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ORIGINAL ARTICLES

PRESIDENT'S ADDRESS BEFORE THE SOUTHWESTERN SOCIETY OF ORTHODONTISTS*

BY DR. W. E. FLESHER, OKLAHOMA CITY, OKLA.

TO BE president of any worthy organization is an honor, but to be selected as the second president of the Southwestern Society of Orthodontists, and to follow its first president, Dr. T. O. Gorman, who served two terms, is an unusual honor. I want you to know, that all that I can tell you will not express my appreciation. I have felt very keenly the responsibility of this position and the confidence you have reposed in me in the matter of assisting in the directing of the destiny of this organization.

At this time I wish to thank the Chairman and the other members of the Board of Censors for the excellent program that has been arranged. We thank Drs. Gorman and Duckworth for their time and energy expended in making the local arrangements. They have sacrificed much for our benefit and enjoyment. And, on behalf of the Southwestern Society of Orthodontists, I wish to express our appreciation of their kind invitation to hold this meeting in this wonderful city, wonderful in its history, its beauty and its climate. We hope that our behavior will be such that we may again be so favored.

And fellow members, I want you to know that we have a real secretary, Dr. P. G. Spencer. He is ever on the job, doing the right thing at the proper time. I do not have the words to express my full appreciation of his services for the year just past. I know, however, that he has made my task as president much easier. Besides serving our Society so efficiently as a secretary, he is accomplishing something along another line that is worthy of comment. It is my understanding that he has instructed his wife so that she is very thorough

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in her knowledge of orthodontia and has the ability to get results. I also understand that she will usually be found at his office. The Doctor is so busy that extra office force is needed. He is so occupied with his interests on the outside that it is only occasionally that his interest in orthodontia draws him into the office. If some of you should wish to look him up, you will probably find him on the golf course flirting with the "dimpled sphere." His influence in assisting in the arrangement of the program is always for the good. This year, he, with some other "enthusiasts," has added a new angle to our program. The old saying—"All work and no play makes Jack a dull boy"—is true with orthodontists. Now, here come these golf followers and plan an hour of our program for such sport and they are quite welcome to it. Psychically and physically we will be in better condition to receive the program as arranged. I am happy that the game is on and here is hoping it will continue to be a part of our program from year to year. In time I hope to progress from a caddy to a real player. The golf course has a tremendous influence in the development of fellowship.

I, also, want to express my gratitude to each of you for your ready response in taking a part in our program. You have added considerably to its worth.

All of you new members and visitors are gladly welcome at these meetings. Feel at home and make yourself one of us. If you want to ask a question, do so. If you want to tell us something, let us have it. We are here for all the information we can get and give.

If we would have our Society continue to develop as it has done in the past under its former leader, we must drive forward with an aim that is high, and forget the mistakes, be they great or small. There is no question but that we will develop and prosper, and with a "We will" determination uppermost in our thoughts, *we will* have one of the best functioning orthodontic societies in any section of the country. In my judgment, our former president and committees planned our organization well. Each member is bound as a part of his duties as a member to present a paper or clinic at each meeting. That alone makes for the success of each program. We feel that a certain responsibility rests on each of us. There is no thought of sitting idly by and allowing the other members of the Society to make up the program. We are planning and thinking throughout the year of something to present at our meeting that will be of interest. This Society then, as can be readily seen, is a developing ground for its members, even though they may belong to some other older and larger societies. We feel perfectly at home presenting clinics or papers at our meetings, when we might hesitate to present the same before some of the larger organizations. By and by, we will develop that confidence and ease of manner that will make our presentations points of merit on any program. The organizers of this Society are to be commended for their thoughtfulness in starting this Society when they did. Year by year new orthodontists enter our territory and we are pleased to know them and to greet them as members, doing our part to make them feel welcome, and to start them in the proper society atmosphere.

The extension of the field of orthodontia has been very inspiring to me. Only within the very few recent decades has it developed as a real department of dentistry. Today, there is no question as to the relation it occupies to general dentistry. The number exclusively in the practice of orthodontia were very few indeed before the advent of the twentieth century. It was only in the very large cities that one was to be found. Now, however, practically every State has the good fortune of having one or more orthodontists. The extension of the field of orthodontia and the increased number of orthodontists has developed the need of more societies. Where there are a number in a section of the country, orthodontia and the public is best served by the benefits accruing from an organization. Fortunate, indeed, is the public where the service of an orthodontist is close at hand. Many are the times in my experience as a general practitioner, my conscience hurt me when I advised that the little patient should have some correction made, but immediately followed with the statement that I did not do such work and that there was not an orthodontist nearer than six or seven hundred miles. I began to treat a few cases and I presume that is one of the reasons why I specialized. The field covered by this Society is so well served that an orthodontist is within reach of most anyone desirous of treatment.

A very good indication in this Society is the spirit of co-operation and the earnest desire to go forward. It seems that here is a great field for us to serve as a Society. We have no precedents to follow. We are just ourselves, with some knowledge of the science of orthodontia. We as members, are architects of the future of the Southwestern Society of Orthodontists. Here, we can solve many of our problems. As I see it, we have an opportunity to work out the best for orthodontia. Will we do it? This can be made the melting pot, so to speak, for all that is good in orthodontia. Each of us has a desire to go further into the realm of our specialty. We can each bring before this Society what is of greatest service in gaining our respective results. In not a great length of time, we will all be using, in a measure, the same methods of treatment, or at least, thoroughly understanding the principles thereof, which is a great blessing in the handling of the case that does not remain long enough in any one location to have the case completed. We are here for the good we can do in creating a greater interest in the correction of the irregularities and deformities. By our continued co-operation a spirit can be developed in our Society that will have a marked influence as to the success of our profession in this section of the country. Working for the good of orthodontia, we will, unconsciously, be working for our greatest benefit along every line.

This being a newly organized Society, our needs are different. We have many young orthodontists in point of practice. Our programs should give some good practical instruction to the younger practitioner, and it will do the older ones no harm. Our minds are open for the best, whether it be the newest or not. It is my hope that we can work out the best features in the different types of appliances and give the patient the benefit of our experience. Some appliances serve one type of movement or development better than another. Why can we not work out the good features of the different appliances and

become practically a unit in their use? Of course, there is, and will be, as long as there is such a thing as personal equation, a slight difference in which each of us will make application, yet, it seems to me that the general ideas can become practically uniform throughout the Society. While one might be obtaining results in a slightly different way, yet, having the same general foundation, we cannot grow very far apart in their use, if we are regular in attendance at these meetings. For if one develops something new and practical, he will take delight in enlightening the others at the next meeting. The chief point of interest to the orthodontist just beginning practice is to get results and to so arrange his economics that he can look the world in the face and smile. He is not so much interested in developing theories, as how best to apply the knowledge already gained. For that matter, we all feel that we cannot get too much of the practical; theories will be cared for.

With this idea in view, Dr. Ketcham was selected to spend a week with us two years ago, and we were greatly benefited by his teachings. This year Dr. Oliver will give us some good training. By these men coming in our midst from time to time, our ideas will greatly broaden and we will unconsciously absorb many things through their personal contact, which will be carried home and which will become a part of us.

In all these meetings where we are together studying, presenting clinics and essays, lunching together, etc., giving our experiences, heartaches, successes and failures, a fellowship is being developed, which, as the years go by, will be one of the chief features drawing us together. We will soon feel like a big family of brothers. The nearer the meeting approaches the more anxious I am to meet the members and to hear their heart throbs and to relate experiences. The closer the fellowship the easier the co-operation. I can see no reason why we cannot develop a spirit that will tie us together like bands of steel. We should not work for ourselves alone; we should have the broader idea in mind. If we will all do our utmost to do the best thing for orthodontia, we will be serving orthodontia, ourselves and fellow orthodontists in a way that cannot be measured.

In this short address it has been my aim to stress co-operation and good fellowship. If I have succeeded, I am, indeed gratified.

CONSIDERATION OF DISTOCLUSION*

BY T. G. DUCKWORTH, D.D.S., SAN ANTONIO, TEX.

OF the three general classes of cases that we have to deal with the ones coming under the heading of distoclusion or more correctly posterocclusion will probably be more interesting at this time. The results in this type of case are largely dependent on the cooperation of the rhinologist and the general practitioner of medicine as the deep underlying constitutional, as well as the so-called local causes that produce these effects on the dental arches are familiar to all of you. Distoclusion is an orthodontic term intended to indicate the general malrelationship of the dental arches, in which the mandibular dental arch is in a posterior position in relation to the maxillary dental arch, and is divided into two distinct divisions, each division being subdivided indicating bilateral and unilateral conditions. The general characteristics in each of these divisions as a rule are readily detected, but generally there are always overlapping and obscure conditions that we know nothing of and we try to group these under the heading of constitutional causes. Viewing these cases from the standpoint of the laity the deformity as outlined on the face is first noticed and the correction of this is most desired as in most cases it is purely a case of vanity, never realizing the true function of the teeth which means better health as the result of proper mastication. The preservation of the teeth is generally considered second and occlusion third. This in reality should be considered in the reverse order as it is only possible to properly care for the teeth and the mouth generally when the teeth have the correct occlusion. Of the dentofacial deformities distoclusion cases are the most progressive and most exaggerated of the three general classes of malocclusion.

In order to carry out the operative treatment working from the basis of occlusion we must arrive at a prognosis and this is based on the etiology of the case and is sometimes quite difficult, especially in advanced cases to analyze early constitutional causes and to overcome local influences.

ETIOLOGIC CONSIDERATION

Malpositions of the teeth, in general, are but objective symptoms of abnormal development of the dental arches, and to go a step farther, the maldevelopment of the dental arches in any class of malocclusion, as well as in distoclusion, is often of a deeper underlying constitutional rather than a local cause.

So-called local causes, such as adenoids, enlarged tonsils, mouth-breathing, thumb-sucking, and the like, while they have their influence in the malformation of the dental arches in distoclusion, yet each one has a deeper underlying cause to account for its own expression.

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Some defective development along the respiratory tract, such as a narrow nasal passage due to some obscure developmental deficiency, may be the cause of the lack of full respiration, of adenoids, and mouth-breathing. Likewise, some nervous reaction is the cause of thumb or finger-sucking or like habit which may have a causation in distoclusion.

It must, therefore, be assumed that the causes of distoclusion are largely constitutional and not local, that the narrow dental arches, the narrow middle third of the face, the adenoids, and other respiratory obstructions are still only symptoms of a more obscure condition which I believe primarily is that of nutrition. Most children possessing this distoclusion are suffering in varying degrees with rickets and associated pathologic conditions.

BIOLOGIC INTERPRETATIONS

"The orthodontic problem, as recognized by the advanced student of orthodontia, is a problem of biology, and in the light of our present knowledge of the subject, no phase of orthodontia, such as the treatment of distoclusion can be studied without attempting to translate or interpret the biologic phenomena concerned with causative factors and to speculate as to their results on treatment and the stimulation to development of the dental arches.

"Among the chief biologic factors in distoclusion is that of heredity, the import of which has always been confusing because of the difficulty of separating it from other causative factors, nevertheless it is a factor which has to be reckoned with. Heredity is today the central problem in biology, and it is as impossible to ignore it in the study of orthodontic problems as it is to ignore the laws of gravitation."

Conklin says, "Whenever the differential cause of a character (resembling a parent) is a germinal one the character is, by definition, inherited; on the other hand, whenever this differential cause is environmental the character is not inherited."

Let us observe what Conklin has to say on resemblances and differences between parents and offspring with the possibility of determining hereditary character: "On the other hand resemblances and differences between parents and offspring are not due to heredity at all, but to environmental conditions. By means of experiments it is possible to distinguish between heredity and environmental resemblances and differences, but among men where experiments are out of the question generally it is often difficult or impossible to make the distinction."

Not being particularly a student of biology and with no desire to provoke an argument I have accepted the theory so far as heredity is concerned which I apply in trying to analyze the cause of some of these extreme cases of distoclusion. It is my contention that the Creator of all things did not intend that the chromatin of the germinal cells be so impressed as to transmit a disease, malformation, or deflection from parent to offspring, however, a predisposition to certain disease and malformation is apparent. We have some authorities who claim that some of these cases are strictly heredity and incor-

rectable, but I have yet to see a case, and feel confident that they are using the word heredity and congenital as synonymous.

Granting, however, that a certain distocclusion of early childhood was suspected to be of hereditary origin and it seemed advisable to wait until the eruption of the permanent teeth to decide this question in order to carry out the principles of extraction of two mandibular first premolars, for example, and retruding the protruding maxillary incisors and canines, one would have to allow the dental arches to remain in their undeveloped and malrelated condition until the eruption of the canines or until about eleven years of age before beginning treatment, losing those preceding years of childhood when natural growth might aid most in developing the dental arches under proper artificial stimulation by orthodontic means.

Again, the weakened and deficient muscular function in these cases would also have to wait the age of eruption of the premolars allowing an intervening growing period of childhood to elapse which might have been to its greatest advantage in strengthening and developing these undeveloped muscles by proper exercise.

CONSTITUTIONAL TREATMENT IN DISTOCLUSION

We have in the past as at the present time given much thought to the mechanical side in establishing normal functional relationship of the dental arches and not considering as carefully as we should the physiology of tooth movement, or bone growth in general. When we place orthodontic appliances on teeth of a child and apply pressure to a tooth, the instant that the pressure is conveyed to the tooth, marks the dividing line where mechanics stops and physiology begins, and inasmuch as the symptomatology reveals disturbances of a systemic as well as a local nature, the treatment of these cases should be constitutional as well as local. For example, if the respiratory system is faulty, the respiratory channels blocked by adenoids or diseased tonsils should be freed by operation and proper breathing and physical culture exercises given for the chest development.

If the child with distocclusion exhibits malnutrition, special diets should be instituted for building up the system to a normal vital standard. If the patient is lacking in the thyroid or pituitary stimulation to growth, the prescribing of extracts of these glands may have a beneficial effect.

Maldevelopment of the body as a whole from unknown causes will have to receive the proper attention at the hands of the experienced physician, although it may be difficult to get any results from experimental treatment.

ACTION AND REACTION FROM MECHANICAL STIMULATION

In producing a change in the osseous tissues by means of mechanical stimulation we must always follow as near as possible the natural laws of functional development never applying more stress than growth would normally take place in those tissues, as overpressure would act in the nature of a compelling force rather than simply a stimulus. Too much pressure produces a compression of the blood vessels at the point of applied force and is probably first received by

the nervous system and through the complexity of the nervous system finds its way back to the circulation and to the cells. We know that any overstimulation to the nervous system long continued will cause fatigue and eventually atrophy. When we think only in the nature of a fracture or malformation, its method of reduction, the mechanical incision and the appliances used, we can never hope to fully understand why we play such a little part in the correction of these tissues with their correlated actions, reactions, and interactions, chemical as well as physical and nutritional. Nature has her own way of doing things which is an exceedingly complex one, and that millions of human ailments are growing into splendid functional relationship without any treatment or mechanical apparatus and it requires mature judgment (of which experiences are best teachers) to speculate as to the time when you should interfere with Nature's processes or whether it would be better to delay treatment indefinitely. Where causes that are well defined or deflection are apparent, there is no argument as to the course to be taken, but it is the early detection of these rapidly increasing influences that gives us our greatest concern. Growth is a very tender and a very delicate process and it takes very little to change the balance of the scale for good or for evil. Only partial mouth-breathing is sufficient at this stage to bring about muscle tension and eventually disharmony of the parts.

TREATMENT OF WEAKENED MUSCULATURE

Most of the severe cases of distocclusion exhibit such lack of development of chest muscles as well as the muscles connected with the jaws, that general posture exercises should be instituted in the treatment and also special exercises for developing the weakened and deficient muscles of the face and neck. These exercises are of especial benefit as many cases have been successfully treated by means of these exercises alone which has given impetus and encouragement in the treatment of some of these complex cases.

HABITS AND THEIR TREATMENT

Habits of lip-biting, finger- and thumb-sucking require special counter-active remedial agencies, mechanical and psychologic.

Protruding points on orthodontic appliances which will cause interference with the lips in biting may have some deterrent effect in the lip-biting habit, and wearing of aluminum mittens will help to cure thumb-sucking habits, unless the patient is too old to wear them, when it is too late to use mechanical deterrents. In these cases every effort should be made to increase the patient's will power to overcome the habit. The power of autosuggestion is very valuable and is often sufficient to effect a cure of these harmful habits. The substitution of other unarmful habits is sound psychologic principle and may be used to advantage in habit cases.

CLASSIFICATION AND TREATMENT OF DISTOCCLUSION

For the sake of clarity and a better understanding of the different phases of treatment of distocclusion the forms are divided into three classes which

range from the simple to the most extreme complications and are designated as simple, compound, and complex. The simple cases are those which require the use of an appliance for restoring the proper form and size of the dental arches without the use of any auxiliary attachments to make the anteroposterior change. The simple cases are those found in young patients and only the anterior portion of the dental arches is lacking in development and at this age the treatments are extremely simplified. The compound cases require appliances for both the establishment of normal arch form and size and for the anteroposterior change in occlusion and are found in patients of more advanced years. Complex cases include all of those more complicated cases which require special treatment for the correction of the abnormal overbite, abnormal occlusal plane, and various other abnormalities not included under the simple and compound cases. In other words it is the degree of malformation that we treat rather than a class and it is evident the earlier the cases are treated the better for all concerned. Beginning a case in its simple form the force from the appliances can be made intermittent varying with the rate of growth and changes which are taking place in that particular individual. The reason for this is that, after the appliances have ceased to be a factor, the teeth continue to change their positions in the direction in which Nature originally designed they should move, and they can better adapt and adjust themselves in this process of natural movement than we can possibly do with our appliances. The process of natural movement is materially altered in the more severe compound and complex cases even though the force from the appliances is made continuous. A continuous force is not a desirable force to use as a general thing, as this force cannot be at all times in harmony with normal development as growth of the bones takes place at intervals and not at a continuous and definite rate and as a result we are likely to establish abnormal development. There is much that can be profitably said in reference to treatment, as each case presents its complications and requires its own peculiar treatment. The treatments could best be presented through illustrations showing the beginning as well as the completed cases, but this would require a great deal of detail which I do not believe you would care for at this time, however, I wish to call your attention to the detail necessary in handling a complex case as compared to the more simple ones as I believe this is where we profit most at these meetings. The first part of this paper was taken from the writings of Dr. Pullen and Dr. Mereshon and with their experience I consider what they have to say as good teaching, as their views work out in practice and it is the practical things that we are principally after at this time. In the simple cases we seldom if ever have to use elastics as the anteroposterior change is made through the expansion of the arches and all of the abnormal forces are readily overcome and if these cases are followed up with the proper attention to the third molars and care is exercised against habits that are likely to develop after the case is corrected there is little chance for the case to go wrong. We do not have as a general thing much trouble with the premolars, canines and incisors erupting in torsioocclusion as we find in class I cases. The appliances are simplified, consisting principally of lingual bars. The compound cases require a more com-

plicated appliance, consisting of a lingual appliance on the mandibular arch and a labial appliance on the maxillary arch with provisions for elastics for making the anteroposterior change, but the change is made in most instances by moving the teeth in mass, that is the nuts on the upper arch are run back against the tubes on the maxillary molar bands and the pull of the elastics shifts the maxillary molars and the anterior teeth distally while the mandibular molars and anterior teeth are shifted mesially. This probably would not hold good in a case of the second division as you would have to occasionally tighten the nuts on the maxillary arch in order to shift the anterior teeth forward and it would also be necessary in the first division in some instances to place a labial appliance on the mandibular arch in order to secure root movement of the anterior teeth. We seldom find missing teeth at this age unless it is in cases where the teeth are congenitally absent and in my practice I find this to be true in about one case in every ten, the maxillary lateral incisors being the ones most commonly missing with the first maxillary premolar following a close second. Occasionally all the premolars are congenitally absent, but I have only seen one case where the canine is missing and this was a case in which the maxillary lateral incisors, mandibular right central, laterals, and right canine were missing. These cases require special treatment in that the spaces created by the missing teeth should be closed rather than maintained. Of two compromises we must select the one that is less likely to be an injustice to the patient and I prefer shortening the arch on the affected side or sides rather than mutilating good teeth and inserting artificial substitutes. In the complex cases, we have everything to contend with that we have in the simple and compound cases and in addition mutilations, crowns on the teeth, large fillings, older patients, etc. These cases require, in many instances, lingual bars in addition to the labial alignment wire in order to secure sufficient expansion especially in the molar region and it is necessary to establish the anteroposterior relation of the molars before attempting retraction of the maxillary anterior teeth in the case of the first division. The mandibular anterior teeth require root movement in most instances in both the first and second divisions. In the second division the force from the appliance is pitted against the molars and anterior teeth of the maxillary arch in establishing the relation of the maxillary molars with those of the mandibular molars and the shifting of the maxillary incisors forward in addition elastics are employed. Many of these cases have failed, due to our inability to recognize and combat forces of an abnormal nature that proves the undoing of our work. I do not believe there are any definite rules that can be laid down that will apply generally to these cases in combating such evils as thumb-sucking, lip-biting, mouth-breathing, etc. The dispositions of children are so different we are compelled to manufacture such remedies as will best suit the case and the results will depend upon how rigid we enforce our instructions; moral persuasion and muscle exercises will do much toward permanent results.

CHRONIC MOUTH-BREATHING*

BY LEWIS KRAMS BECK, M.D., SAN ANTONIO, TEXAS

WE all know that the normal breathing path of the upper respiratory tract is through the nose, and how this organ with its wonderfully constructed mechanism prepares the air for the lower respiratory tract by filtering out the dust particles, moistening, and at the same time warming the inhaled air so that it is always delivered to the lower respiratory tract at even temperature; consequently the normal interchange of oxygen and carbon dioxide gas can take place in the lungs with least irritation to the delicate cells in the alveoli. With this proper interchange of gases we have the blood stream well oxygenated, resulting in a normal digestion and a proper functioning of all the organs of the body. All this, however, is changed when from some cause the upper breath way is obstructed, making a chronic mouth-breather out of the individual.

We will confine our remarks to mouth-breathing in early childhood and young adult life, those cases in which orthodontia is called in to help us out in our treatment.

Let us give two hypothetical cases to show how much a mouth-breather is developed.

CASE 1.—Take a six weeks' old infant with a coryza, the nose is occluded with mucus and engorged mucous membrane. If this condition is allowed to continue the patient, from necessity, becomes a mouth-breather. If the nasal occlusion is removed before the habit of mouth-breathing is established there is no further disturbance.

CASE 2.—Take a little older child, say about three or four years, previously a nose-breather, catches cold, has inflammation of the lymphoid ring, the post-nasal space is occluded with adenoids, the cold is more or less continuous for some time, the child soon acquires the habit of mouth-breathing through necessity. The pressure to the roof of the mouth by the tongue is removed and a constant current of air is directed against the hard palate. If this condition continues the superior maxillary bones will be small and irregular, the dental arch will be narrowed and very high, causing an encroachment upon the nasal space with beginning deflection of the septum. Let this condition go on without treatment and the child enters the period of second dentition with the palatal arch contracted and the teeth remaining normal in size, there is not room enough for the normal eruption and we have a condition of irregularity of the teeth, particularly the incisors which frequently overlap each other; at this time we have a much more marked deviation of the septum and possibly nasal spurs with resulting encroachment upon the normal nasal breathing space.

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Resulting from this chronic mouth-breathing we frequently have decayed teeth chronically inflamed and often infected tonsils with a more or less inflamed condition of the respiratory tract with improper interchange of gases in the lungs, resulting in deficiency in oxygenation of the blood, which sooner or later results in gastrointestinal disturbance which may lead to a condition of autointoxication which in turn through the blood stream acts as an irritant to the mucous membrane of the nose, causing still more obstruction to nasal breathing, in fact a vicious cycle is established.

Other complications are infections of the various sinuses and involvement of the eustachian tube and middle ear, resulting in impairment of hearing and possibly a suppurative condition leading to its many complications.

TREATMENT

In young infants treat all cases of acute coryza by shrinking the mucous membrane of the nose with an oily solution of menthol and camphor, keep the parts as clean as possible, that is, try to reestablish nasal breathing.

In older children, the treatment is both nasal and dental, removal of the tonsils and adenoids is indicated, also removal of large nasal spurs. The deflection of the septum will take care of itself, provided the maxillary dental arch is widened at a sufficiently early age. The occlusion is rectified, and the mouth allowed to close without voluntary efforts. If the dental arches are sufficiently spread the nasal fossæ will spread also and the whole facial anatomy will fall into normal lines.

Do not operate for chronic mouth-breathing, unless you have obtained the consent of the parents to put the child in the hands of a competent orthodontist, who will greatly assist in reestablishing nasal breathing; without his help you are doomed to failure with its consequent ill repute of your surgical ability.

CERTAIN LIMITATIONS IN THE USE OF APPLIANCES IN ORTHODONTIA*

BY OREN A. OLIVER, D.D.S., NASHVILLE, TENN.

IN the following paper and clinic it is purposed to consider orthodontic appliances,—not in any exhaustive way, but rather from the viewpoint of some of the limitations which ought to be borne in mind in daily clinical practice.

In discussing the bad features and limitations of appliances, one must remember that appliances are mechanical devices for exerting pressure on malposed teeth, thereby influencing cell metabolism with a view of causing the teeth to assume their correct functional relationship.

Dr. John V. Mereson defines functional relationship in this way. "While we are moving the teeth from their positions of malocclusion to normal functional relations, the tissues surrounding and supporting the teeth will so adapt and adjust themselves through an interaction of forces, that the proper equilibrium between teeth and tissues is maintained during the whole process of tooth movement." Going further, he says: "Appliances are effective in proportion as they apply force in the direction of normal growth, and in so doing, do not interfere with the function of any of the tissues associated with the teeth, or with the teeth themselves collectively or individually; each tooth being free to functionate normally."

An appliance in conformity with absolute harmony between normal growth and the stimulation of the supporting tissues would be ideal; but as yet, there is no ideal appliance. All types of appliances thus far devised have some admittedly bad features, and successful orthodontia is not altogether due to the appliances employed. Orthodontia depending entirely on the appliances often comes to grief in its ultimate results. In the past orthodontia consisted in aligning irregular teeth. Now, we believe we are treating oral deformities, partially or wholly interfering with normal function. In the past, the object in view was to push or pull teeth into position in the quickest way,—regardless of the results. Now, we understand that no mechanical device can make an absolutely perfect normal occlusion. The individual size and shape of the teeth and the gradual growth of the associated oral structures play an important part.

No appliance working alone can accomplish the ultimate good sought. A proper appliance should be only a stimulus to supporting tissues of the tooth by pressure applied to it. It should work in conjunction with, and at the same time in opposition to the natural stimulus of growth going on in these tissues. The dental arch as a part of the individual grows with the individual,

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and, the stimuli of the appliance and natural growth must be reconciled,—the appliance being the controlling factor.

The rapidity of the work of the appliance must also be limited, as the teeth must not be moved faster than in normal growth, even though the appliance works continuously in the opposite direction. Normal growth, if given a chance, will usually accept part of the burden of developing normal occlusion.

Referring to our definition of an ideal appliance, we find it must first exert pressure on the malposed tooth; second, it must alter cell-metabolism, and only as a result of the first and second, can the third be accomplished. It should cause the teeth to assume their proper position and relation. If only one of these three requirements existed, there would naturally be less liability for bad features to arise. Not only does the three-fold function of the appliance lead to bad conditions, but we find that the environment in which the appliance is to be used tends to develop bad features. The appliance should be capable of doing the things it is supposed to do, and must also be able to withstand much abuse which arises as a result of mastication and use of the brush.

It must be remembered that the amount of space available for the application of the appliances is sometimes detrimental to the construction and design of the appliances. The space in the oral cavity is necessarily limited and the lips and the tongue will not tolerate bulky devices.

The first feature of appliances to be considered is that in all designs built along the lines of efficiency, the appliance must be considered according to standard mechanical principles in order to be a success. But the question of efficiency is influenced by conditions which we have already mentioned, and which now must be related to another feature; that is, the stability of attachment, a good feature, but sometimes classed as a bad one. Many otherwise efficient appliances have been rendered useless because of insecure attachment to the malposed teeth and also to the anchor teeth.

I mention stability as one of the bad features of appliances and one that possesses certain limitations, because I am convinced that a large amount of the unsatisfactory results of orthodontic treatment can be attributed to this one thing. The stability of attachment must be recognized from two points of view, the attachment to the anchor teeth and the attachment to the malposed teeth. The attachment of the anchor teeth, or the anchorage, will always be a bad feature because an ideal anchorage cannot be secured inside the oral cavity. The majority of anchorages employed are obviously unstable, as any given tooth or teeth are always slightly movable; such a thing as an ideal anchorage is consequently not obtainable. Recognizing this as a bad feature in the beginning, we will achieve greater success if our appliances are designed with this weakness in mind. If we recognize this undesirable feature at once, all limitations can be more or less satisfactorily solved by utilizing the strongest available structures at the beginning, and designing the appliance so as to favor such anatomical structures as are present.

Another bad feature of anchorage is the fact that the slightest amount of pressure exerted upon the tooth or teeth if continued sufficiently long, will

result in tissue change, which will allow the teeth to move as a result of that pressure.

A further reason—instability of appliances may be classed as a bad feature, due to the common unsuccessful attachment of devices on the malposed teeth. This one feature has resulted in the failure of many otherwise satisfactory appliances, even with the use of such a common and simple device as the jack-screw. We have seen it utterly fail because of insecure attachment to the malposed teeth. Such a statement can also be made in regard to the alignment wire when used with wire ligatures, or in regard to finger springs that have not been properly secured to the malposed teeth.

Many men have recognized these bad features in appliances and have centered every attention upon some method of securing the appliance to malposed teeth, with the result that the attachment has become so rigid as to absorb the exerted force on the malposed teeth, and offer sufficient resistance to produce a movement of the anchor teeth. The very nature of malocclusion is such that when the appliance rests on or touches the malposed teeth, it must be in such a manner as to allow all of the functions of mastication to be performed. This is a physiologic requirement that should not be overlooked, and likewise it is one that can hardly be lived up to with the modern appliance. In other words, every one knows that it is necessary for the teeth to function properly, and this very thing is liable to result in insecure attachment; so it then becomes necessary to select the lesser of the two evils depending on the type of malocclusion which has been treated. Opposed to the appliance is the stress from mastication which cannot be done away with, though as this stress is infrequent and that of the appliance continuous, the appliance is the controlling stimulus.

Another limitation in appliances is the material which we are forced to use in their construction. That the materials are not satisfactory is proved by the fact that the orthodontists of today are not united on any one material.

The question of proper band material is always divided by three factors; the expense, the working qualities, and the degree to which the band material stands up under mastication. The band material best suited to the type of appliance used should be selected with the greatest care, as the life of your appliance depends upon your well fitting bands.

Band material may also be selected because a certain kind of appliance is to be employed. If we use a pinched lingual wire according to the technic which has been so well described by Dr. Lourie, the success of this technic will depend upon the employment of a stiff and rigid band material. The band must be of a stiffness and rigidity which will not permit its stretching at the time the appliance is pinched.

Up to the present time iridoplatinum band material has been Doctor Lourie's choice, as it has also been of many men who have had extensive experience with the wire-pinching technic. However, when we consider iridoplatinum as a band material, we find it has one decided disadvantage when used in clinical practice, and that is its original cost.

Other men do not like iridoplatinum because of its stiffness and difficulty

of manipulation, and several men of acknowledged leadership in orthodontia, are now using a gold alloy for bands.

This alloy for band material when used for finger springs is satisfactory because the removable lingual appliance does not exert the same strain on the band as does the pinched wire. The gold alloy when used for bands can be more easily adapted to the teeth, but this last adaptation is considered objectionable by some men because any band material that can be easily burnished and fitted to the teeth will be equally as easily bent, stretched and torn as a result of mastication.

Another limitation of appliances is found in the materials which we are forced to use. Up to the present time materials manufactured have had a number of disadvantages. The orthodontists have been compelled to use the materials supplied. This is probably true because orthodontists have not been united in regard to qualities the materials should possess. In selection of materials it has been found that a certain alloy used according to one technic will be satisfactory, while employed differently it will be a failure.

This means that the limitation of appliances in regard to materials is governed to a great extent by the technic used. You will better understand what I mean, if I refer to the removable appliance better known as the "Jackson Appliance," which for years, has been constructed from aluminum-bronze and nickle-silver. These two materials when applied according to the technic of Dr. Jackson have been satisfactory, but the limitations are noticed if you use them in conjunction with hard solder.

In conclusion, it might be desirable to summarize the essentials of what we may expect from our appliances. It is essential to success to thoroughly study each case and to get clearly in mind what we expect to accomplish; it is essential to select our anchorage so as to secure the best stability obtainable; it is essential to secure adequate fixation of our appliance to the tooth or teeth to be moved. It is essential to select materials which will act in accordance with our scheme of treatment. It is essential that tooth movement should be regulated so as not to exceed the capacity of tissue for growth and repairs. If the present paper assists in impressing these general facts, its purpose will have been accomplished.

RESPONSE TO DR. S. B. RIGGS' ADDRESS OF WELCOME TO THE
SOUTHWESTERN SOCIETY OF ORTHODONTISTS, AT
SAN ANTONIO, TEXAS, JANUARY 17-20, 1923*

BY DR. T. WALLACE SORRELS, OKLAHOMA CITY, OKLA.

AT the time I received the program I felt very much the same as when we get one of those flattering letters, running something like this—"You have been selected as one of three dozen representative business men in the city on account of your high social and professional standing to receive one set of our most extraordinary twenty volume, morocco bound, international loose-leaf encyclopedias by only notifying us where to make the delivery and giving us your highly valued letter of recommendation and endorsement." It is all very fine until delivery is made of the books and contract. Then it is quite different. However, since my name follows the dotted line I will now try and fill my part of the contract. By the way it is important to read more than the dotted lines, that are presented us to sign.

While we are all delighted to be here for this meeting I am sure Dr. Riggs' address causes us to feel more than welcome. It is surely evident with a one hundred per cent attendance and nearly all of us coming a day or two in advance of the meeting dates to see each other again and start the ball-rolling, that we all wanted to visit this great Play Ground City of the Southwest.

Dr. Riggs' brief summary of San Antonio's history is indeed very interesting and it has undoubtedly kindled within us a more profound spirit of brotherly love. We should know and ever remember something of the works and trials of the old pioneers, who contributed so much of their lives to the building of these great cities. They serve as a great inspiration to us. I am reminded of the poem by an unknown author called "The Bridge Builder," which I wish to give you.

An old man traveling a lone highway
Came at evening cold and gray,
To a chasm deep and wide.
The old man crossed in the twilight dim,
For the sullen stream held no fear for him,
But he turned when he reached the other side
And built a bridge to span the tide.

"Old man," cried a fellow pilgrim near,
"You are wasting your strength with building here,
Your journey will end with the ending day
And you never again will pass this way.
You have crossed the chasm deep and wide,
Why build a bridge at eventide?"

*Read before the Southwestern Society of Orthodontists, San Antonio, Texas, Jan. 17, 1923.

The builder raised his old gray head,
"On this path I have come," he said,
"There are fellows after me today,
A youth whose feet will pass this way.
This stream which has been naught to me
To that fair-haired boy may a pitfall be,
He, too, must cross in the twilight dim.
Good Friend, I am building this bridge for him."

In behalf of all the fellows, I wish to thank you most kindly for the hearty welcome you have extended us, not only as visitors to your unique and beautiful city, but as guests of your Midwinter Dental Meeting. You may have all your dansants, social teas or corn parties whatever they may be and we may like them all, but for a regular time you cannot beat a bunch of good fellows and a dental meeting, when it comes to having something better than anything else.

That good old southern hospitality sure manifests itself most strongly in Texas. I do not know when I ever spent a more delightful week, unless it was on my honeymoon, than I did with this bunch at Dallas two years ago. A serious lot you are in work, but taking time to mix it up with a lot of good fun.

I think it quite in line with the development of our Society to hold what may be termed the first regular annual meeting in San Antonio, as it was here that this Society originated. Our Dallas meeting could be called an organization meeting and the Oklahoma City a sandwich special while this is sure to be our first meeting in a truly organized way.

We all owe our good friends Doctors Duckworth and Gorman a real debt of gratitude for giving this Society birth. Who can even begin to estimate the valuable service it is to render the profession and the public?

Has it really occurred to you as to what we are here for? I dare say, our first thought would savor of self-improvement and enjoyment. After having concentrated our thought impulses for a couple of minutes we begin to view it in a broader sense and find ourselves searching for an answer that covers an almost unlimited number of things. We are attempting to give expression to our ideals, whatever they may be in relation to orthodontia, the profession and the public. We may estimate in terms of mental and physical efficiency, operative technical skill and ability all of which go to make us more successful business men according to our own individual interpretation of success.

In this connection we must not be forgetful of our duties and obligations to society which we assumed in selecting our vocation as orthodontists. For convenience of discussion they might be divided into four divisions.

First. Orthodontists, or among ourselves we should strive to promote and maintain that friendly and co-operative spirit which is so necessary to our common welfare. We should not be too quick to judge one another as it is only human to err. Trivial preferences should be set aside in order that important things may be accomplished. To get into any mud slinging contest is to only injure each other and orthodontia in general.

Second. The profession; in naming the profession I mean the medical with all its branches, but mainly that of the general practice of dentistry. It is

through this channel that our opportunity for service is the greatest and upon which I wish to lay particular stress.

There has been a growing tendency to give orthodontia little consideration on state and district dental society programs. This is extremely unfortunate and may be attributed to two reasons: first, the general practitioner, who has no desire for information in regard to orthodontia, and second, the orthodontist who believes the general practitioner should not receive too much enlightenment on the subject. Both are doing themselves, their profession, and the public a great injustice. We should claim a place in our district and state society programs and by a constructive educational process along the lines of diagnosis, preventative orthodontia and dangerous practices much can be done towards advancing orthodontia.

Third. The patients; owing to the fact that we are specialists and the majority of our patients are referred to us by dentists, they have a right to expect that we are extraordinarily qualified to render orthodontic service. It is therefore essential that we continue unceasingly to gain more knowledge and technical ability. Almost if not equal importance is the conduct of our practices on a highly ethical basis.

Fourth. The public is entitled to know something of the causes of mal-occlusion. They should know it may be prevented and whose service to seek for corrective treatment. The very fact that the great majority of our patients are still referred to us from dentists is proof that the public knows little or nothing about who and why of an orthodontist. This responsibility of educating the public rests mainly upon us. I believe, that a highly dignified and ethical program of education can be worked out. We are pioneering orthodontia in this Southwest, and are charged with building conditions and circumstances that will and must have an influence upon tomorrow, this year and years to come.

THOUGHTS WHICH AROSE IN READING DR. JACKSON'S PAPER, AND ITS DISCUSSION*

BY CALVIN S. CASE, M.D., D.D.S., CHICAGO, ILL.

IN reading Dr. Jackson's paper, one cannot help but be impressed with the thought that here is a man who has the courage of his convictions to state what he believes is absolutely true. Furthermore, his technical detail leaves no doubt in the mind as to his exact meaning. It shows from start to finish considerable ingenuity and an earnestness of desire to add something of importance toward the progress of orthodontia.

We all may not agree with him today, but that is of little importance compared to what we may believe tomorrow, or even twenty years from now, if all he claims is true.

In my many years of practice of dentistry and orthodontia, many things of importance have arisen which were abundantly proved to the full satisfaction of the man who introduced them, but which took even more than twenty years before they were placed as sure stepping stones of progress.

It will be remembered that the main object of Dr. Jackson's paper was to show how through a continuous application of anteroposterior intermaxillary force, as an auxiliary to certain ingeniously constructed bite plates, that malocclusions of Classes II and III—in which there is a full or partial disto-mesial malinterdigitation of buccal cusps—can be corrected through the possibility of bending the rami at or near the angles of the jaw so that the body of the mandible with its contained teeth will be forced to take a more anterior or posterior position in relation to the maxilla and maxillary teeth, resulting in normal occlusion; and what is of paramount importance, this new relative position of the mandible and mandibular denture can be permanently retained. This I believe is a fair statement of Dr. Jackson's claims.

It may be interesting to note that in the discussion of a paper which I read before the International Dental Congress in 1893, that the late Dr. Bogue even at that early date mentioned a number of the same principles in the regulation of the teeth which afterwards characterized his entire practice with unabating enthusiasm up to the very last, as shown in his discussion of Dr. Jackson's paper only a few months ago.

In the early days, Dr. Norman Kingsley introduced the theory of correcting Class II malocclusions by the immediate forcing of the mandible through the action of bite plates, to take a more anterior position in relation to the maxilla. This operation he named "jumping the bite." Before placing the dentures in normal occlusion in this way, he regulated the teeth so they would harmonize with their new position. But when once placed in normal occlusion,

*Published in the January, 1922, International Journal of Orthodontia.

the dentures were supposed to be prevented from biting in any other occlusion until certain permanent changes were established in the temporomandibular articulation, either by a bending of the condyle at its neck, or the building in of tissue in the glenoid fossae to form new sockets. Dr. Kingsley in his "Oral Deformities" published in 1880, does not say what physical action takes place in securing permanency of position, but strenuously asserts its reliability. Those were the days when teeth were regulated and retained mainly through the medium of rubber base plates and their attachments. During the 80's, after thoroughly trying Dr. Kingsley's method in a number of favorable cases of Class II for youthful patients, and finding in every instance that after the interlocking occlusal devices and intermaxillary forces were removed the mandibles invariably moved back to their former inherited malocclusion, I then determined and proclaimed in several writings that the so-called operation of jumping the bite was not practical, because it could not be permanently retained. And notwithstanding the fact that many quite noted orthodontists have followed this practice and continue to proclaim it as reliable in their teachings, and while it may be true that there are a few instances in which permanency of retention has been attained, I am still as unconvinced as in those early days that the operation of jumping the bite, through any attempt to permanently change the position or form of the mandible *per se*, does not belong to the reliable operations of orthodontia.

During the years which immediately followed the Kingsley proposition, a number of controversial papers and articles appeared from dentists who like myself failed in establishing permanence of this operation. One writer proposed to bet \$1,000.00 that no authentic proof could be presented showing absolute permanency of retention.

In a paper read before the Odontological Society of Chicago, and published in the May and July, 1894, *Dental Review*, and in an article published in the February, 1895, *Dental Review*, I replied to articles from the pen of Dr. Ottolengui who claimed he had *permanently* corrected "hundreds" of these cases after Kingsley's plan. In all of these papers I endeavored to show the futility of this operation, and as I said before, I never have had any reliable reason for changing my views. Nor do I at this time see any material difference between the Kingsley method and the operation proposed by Dr. Jackson in which he claims to attain a permanent bending of the rami at the angles where they join the body of the mandible. This seems to me to be a far more unthinkable operation than the temporomandibular change.

If one will study from a mechanical standpoint the peculiar form and working forces of the mandible, and then consider the heavy strains of a lever of the third kind that are necessarily put upon it from the very beginning of postnatal life, he will understand why in the evolutionary processes of development it is almost the first bone to become fully ossified, and why it is composed of such a solid compact structure particularly at the angles where there is a constant and considerable pressure brought upon it calculated to bend it.

I can understand how if it were possible to exert a continuous anteroposterior pull or push force upon the body of the mandible during very early in-

fantile life, or even up to five or six years of age, when its structure is more yielding, that the rami might be prevented from assuming their full adult angles, which would doubtless cause the body of the mandible and its contained teeth to take a more anterior position, but it would also be sure to cause an open-bite. On the other hand, with force posterially applied, the acuteness of its angle would be increased. But there is no way of applying a force upon the mandible in an anterior direction, except through the medium of the teeth. And though it is possible that a nicely adjusted force pressing upon the chin would in time change the angles of a prognathous mandible or cause changes in the temporomandibular region that would ultimately result in a lessened degree of mandibular prognathism, I think it would be rare to find a mother who would ever be willing to apply this force to her child early enough and continuously enough to effect any change. After all, it is im-

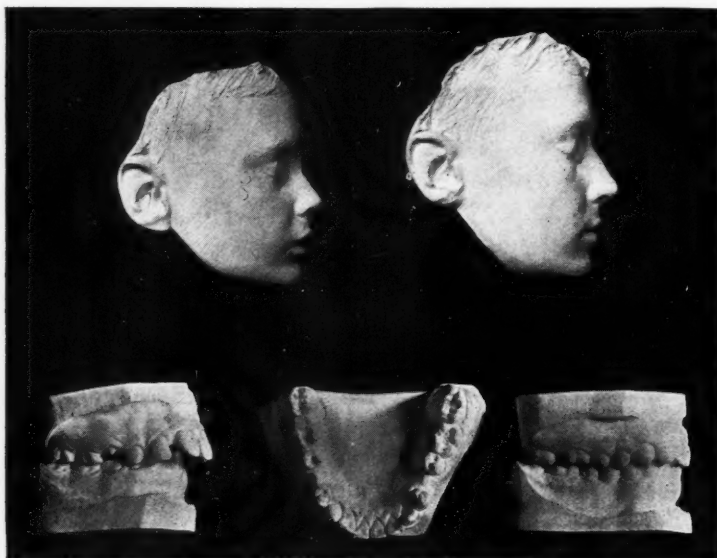


Fig. 1.

possible at that early age to prognosticate what the conditions will be later. Nor are we able to say definitely what inherited form or relation the mandible will assume any time before the early years of adolescence, or even before the middle stage of this term, as has been frequently pointed out, based upon authentic evidence.

The reason I am convinced that during early infantile life the rami may be made to assume a more obtuse angle in relation to the body of the mandible if it were possible to apply, even lightly, a more or less continuous force, is that there is no other way to account for the common form of open-bite malocclusion, as I have repeatedly pointed out, except through the forces of the muscles upon the mandible during the long continued early habit of mouth-breathing—a full explanation, giving the mechanical *modus operandi* of its action is published in other writings.

Some years after the practical application and prominent introduction of the Intermaxillary Force in 1892-93, as an aid to the bodily anteroposterior

movement of the front teeth and interstitial disto-mesial movement of buccal teeth, this force was employed quite extensively as one of the main adjuncts in operations of jumping the bite. At a December 1893 meeting of a Boston Dental Society (nearly one year after this force was published in the *Dental Review*, and subsequently in the *Proceedings of the Columbian Dental Congress*) Dr. H. A. Baker suggested this principle as a possible means of jumping the bite by forcing the mandible to bite forward of its inherited position so that the dentures were brought into normal occlusion. He showed the articulated models of his son's teeth, with the elastics in position, which he proposed to regulate in that way. And while it was afterwards shown that he did not practically employ this force in this way until some years later, he nevertheless was the first to propose its employment in operations of jumping the bite.

In the latter part of the 90's this force was employed in the Angle School at St. Louis, Mo., for jumping the bite with the supposition that the operation was accomplished according to Dr. Baker's idea by an anteromandibular movement. And this prevailed until Dr. L. S. Lourie—who was then one of the demonstrators in that school—discovered that the movement of the teeth to normal occlusion was not due to a mandibular movement, but to an interstitial anteroposterior movement of both dentures in relation to the mandible and maxilla. But this did not prevent Dr. Angle from proclaiming it as his own discovery in that very notable paper on Normal Occlusion which he read before the New York State Dental Society in 1902. Nor did it lead him to remember another incident which occurred about five years before that, which brought him into immediate contact with this force employed for the very purposes which he was endeavoring to prove was his own discovery.

In all my past teaching, and also in this article, I have endeavored to state quite plainly my disapproval in regard to the possibilities and permanency of the so-called "jumping the bite operation," whether it is claimed to be accomplished by the Kingsley or Jackson methods. I have also stated my disbelief in the practicability of any operation which depends for its success upon a permanent movement or change in the inherited form and relative position of the mandible. I was therefore quite surprised to find that no less an astute thinker than my friend Dr. Dewey unintentionally misconstrued my teaching with the seeming claim that I performed the same operation as Dr. Jackson, but accomplished it in a different way.

In the discussion of Dr. Jackson's paper in making reference to the paper which I read before the American Society of Orthodontists, entitled "Principles of Retention in Orthodontia" he says: "Dr. Case had convinced himself from long experience that the forward movement of the mandible in the temporomandibular articulation was a failure. A change must occur in the body of the mandible. While he did not arrive at the same explanation as Dr. Jackson, still he accomplished the thing in another way by lengthening the dental arch by carrying the anterior teeth forward sufficiently far to lengthen the mandibular arch so as to put in an artificial substitute and make a mandible with three premolars. He has worked on the idea along

another line to keep the condyle where Nature put it and bring the body of the mandible forward."

Now let us understand this. His reference refers to a particular character of malocclusion—sometimes termed "distal occlusion"—which in my classification is Division I Class II, the definition of which is a marked retrusion position of the entire lower denture *in relation to a normally posed mandible and chin*, facially characterized with a retrusive position of the lower lip and deepened labiomental depression. The maxillary teeth and upper lip are not materially protrusive, and are often found in perfect dento-facial relations.

In the paper Dr. Dewey refers to, I had been endeavoring to show that in all marked divisions of Class II of common inherited type—both protruded uppers and retruded lowers, the common popular operation of shifting the dentures to normal occlusion—while comparatively easy to perform with the intermaxillary force—was not considered, in my practice, a reliable operation, because the corrected dentures in nine cases out of ten *will not stay put*, even though perfectly retained in position for years.

I had long ago decided, especially with upper protrusions, to leave the occlusion of the buccal teeth untouched, except to place them in perfect antagonizing occlusion, and to correct the facial deformity by a retrusive movement of the six upper front teeth alone, which was accomplished by extracting a premolar on each side.

In regard to the correction of the lower retrusion to which Dr. Dewey refers, I had adopted the same plan which I had for many years practiced in the correction of retruded maxillary teeth of Class III, which is to force the retruded front teeth bodily forward so as to leave spaces between the premolars for the insertion of artificial teeth. This simply prevents the front teeth from moving back to their former position. Now what do I do? Do I lengthen the body of the mandible in any way? Why should I, when it is already in harmonious relations, as shown by the normal pose and position of the chin. I simply lengthen (if I may use the term) the mandibular *dental* arch, and place it in harmony with the mandible and maxillary arch, thus correcting the facial imperfection by the same permanent character of operation which has been successfully employed by me for years in cases of retruded uppers.

Fig. 1 is the figure which was employed to illustrate the character and show plainly the three lower premolars in the corrected denture on the right. The middle cast, however, shows the spaces between the first and second pre-correction of the particular case referred to. But unfortunately it does not molar where the single tooth bridge dentures were placed.

CASE REPORTS

PROGRESS OF A CASE USING A WIRE SKELETON BITE PLANE*

BY S. L. KREGARMAN, NEW YORK CITY

THE consideration of bite planes is still an important factor in orthodontic literature. Bite planes have been used, made of vulcanite, attached to bands, as part of a Jackson crib and in many other forms. An appliance is here presented that has proved very efficacious in the treatment of cases complicated with decided protrusion of the maxillary anterior teeth and abnormal overbite with a needed vertical development in the premolar region.

The appliance is not of original design. It was shown to the author by Dr. John Ross, who, however, also disclaims originality, consequently I am unable to say who conceived the idea. Nevertheless, it has been a useful adjunct in my practice and as such, I present it for your consideration, with the following description.

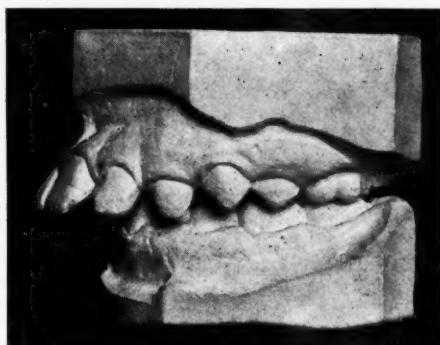


Fig. 1.

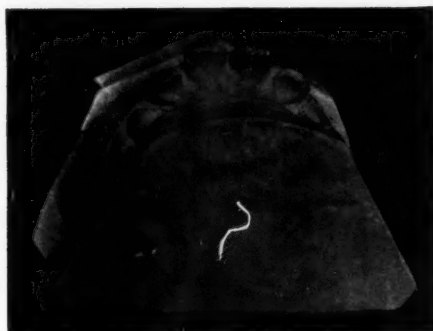


Fig. 2.

The case used for illustration is of a character not infrequently seen by the busy orthodontist. It is one of bilateral distocclusion complicated by a decided maxillary anterior protrusion with a history of thumb-sucking for years. Figs. 1 and 2 illustrate the relation of the mandibular anterior teeth to the maxillary teeth and their position of occlusion at the linguogingival gum line.

The appliance is very distinctly shown in Figs. 3, 4 and 5. The attachment used was a half round pin and tube but any stable form of lingual lock is applicable. The first step is to fit the lingual bar of nineteen-gauge spring wire, allowing space for lingual retraction of the incisors. The anterior section of this bar is reinforced distally by wire of the same gauge to afford two

*Read before the American Society of Orthodontists, Chicago, Ill., April 24-26, 1922.

soldered attachments for the fingers that are fitted to lock over the incisal edge of each incisor. These fingers are made of twenty-gauge wire and should not come in contact with the tooth at any other point than the incisal section of the labial surface. Fig. 5 illustrates the amount of wire necessary to grip the labial surface. The adjustments are made by pinching

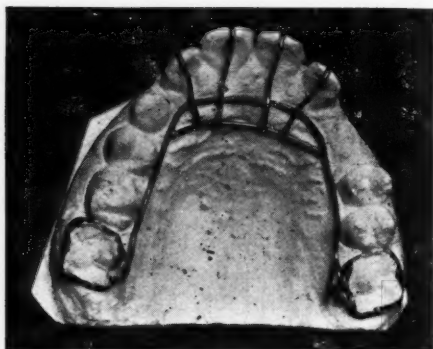


Fig. 3.

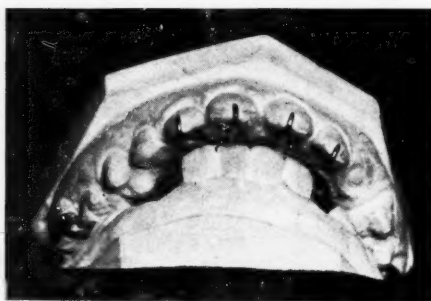


Fig. 4.

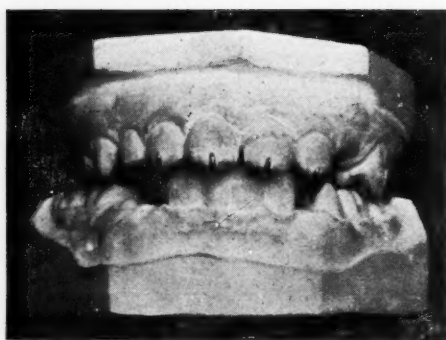


Fig. 5.

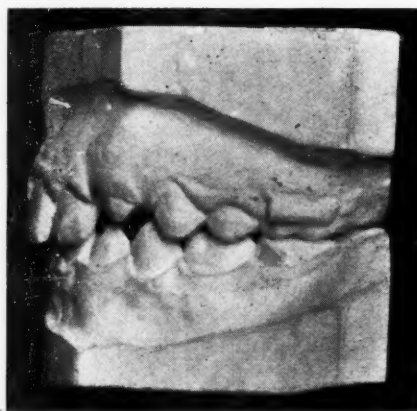


Fig. 6.



Fig. 7.



Fig. 8.

at the labial end of the wire, making it rather difficult to spring over the labial surface. This will cause the appliance to spring up in the lingual, opening the bite.

In some cases there is a tendency for the appliance to drop down after the tension is exhausted and it is often necessary to devise a means of re-

taining it in place. There are many satisfactory methods. It can be ligated to one of the centrals or a central may be banded with a small spur attached on labial surface, a twenty-four-gauge wire is soldered parallel to the finger that grips the same tooth and is best to lock over the spur, in other cases the first two premolars may be banded with spurs on lingual and ordinary finger springs of twenty-four-gauge wire may be fitted to catch under these spurs on the premolar bands with pressure occlusally which will tend to stabilize the appliance and at the same time produce the necessary downward growth of the premolars.

Figs. 6, 7, and 8 illustrate the progress after ten months of wearing of the skeleton plane without the assistance of any other appliance. The present condition does not show the completed case as it will be necessary to use another form of appliance.

The advantages of this apparatus are very obvious. (1) It is a fixed appliance, consequently superior to the vulcanite plate which is worn or not, as patient is inclined. (2) Pressure is distributed over a large number of teeth, eight incisors. (3) Very few teeth are banded.

Its chief disadvantage is that it does not present the incline that is so necessary in marked distal conditions and a forward movement of the mandible is not encouraged.

CASE REPORT USING BUT ONE LINGUAL APPLIANCE*

BY DR. ERNEST N. BACH, TOLEDO, OHIO

ALTHOUGH this case is not completed, Dr. Hume wished me to give a report of same.

Patient seven years of age, both arches constricted, especially the mandibular arch. The anteroposterior relation of the arches nearly correct; cusps well defined and relation good; extensive overbite; all deciduous teeth

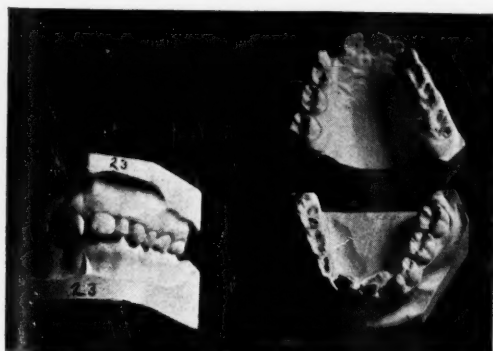


Fig. 1.—Shows occluded and occlusal view of case before treatment.

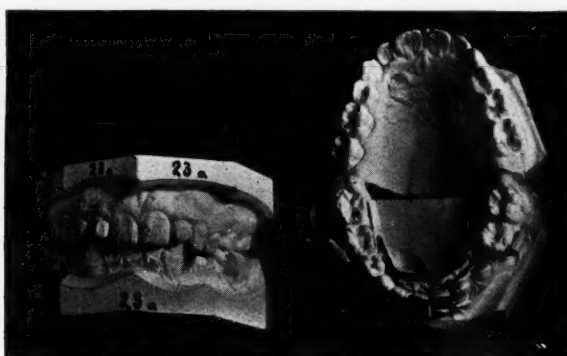


Fig. 2.—This shows the case 15 months later, the lingual appliance used, together with the lateral springs, and the wire extensions soldered to the lingual of the molar bands. Note the difference in size and shape of the maxillary as well as mandibular arch from that of Fig. 1.

*Read before the American Society of Orthodontists, Chicago, Ill., April 24, 25, 26, 1922.

at this age in position with exception of maxillary right lateral incisor, which had been lost.

The mandibular second deciduous molars were banded, a lingual 19-gauge removable wire was adapted with lateral recurved springs, 23-gauge, soldered to the removable wire. One spring was used on either side, exerting pressure on the anterior teeth as well as the first deciduous molar. A wire extension was soldered on the distolingual surface of the molar band to engage the six-year molar. General expansion was gained from force exerted by the 19-gauge wire.

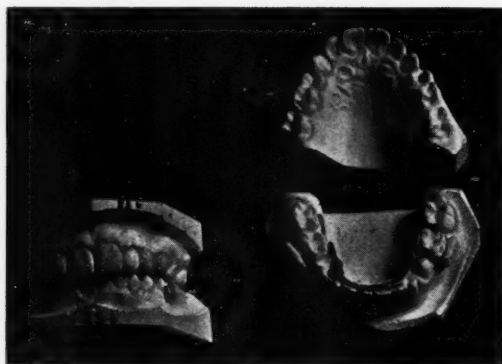


Fig. 3.—Shows the case at 20 months. The anterior section of the lingual appliance was removed, and replaced by a new section to close space which had formed when the anterior teeth were moved forward. The two lateral springs were removed, and one anterior spring soldered as shown. By carefully checking up it was found there would be sufficient space for the mandibular left canine to take its position as soon as the second deciduous molar was lost on that side.

Expansion gained in the mandibular canine region was 4 mm., in the first deciduous molar region, 3 mm., in the first permanent molar region, 2 mm. Corresponding expansion in the maxillary canine region was 2 mm. In the permanent and deciduous molar regions approximately the same as in the mandibular molar regions.

The models were photographed from exactly the same distance.

CASE REPORT*

BY CHARLES R. BAKER, D.D.S., EVANSTON, ILL.

I HAVE the privilege this morning of presenting for your consideration a little patient, with deciduous dentures, who is undergoing orthodontic treatment. You will note that the original casts show a great lack of development of the maxilla, with the maxillary incisors and canines fitting entirely to the lingual of the mandibular arch. The maxillary deciduous molars also are somewhat posterior of their normal relation to the mandibular teeth. (Figs. 1, 2, and 3.)

There is nothing original in the appliances or method of treatment, but I wish to illustrate and emphasize the importance of early treatment in cases of this type, to show you how easily results are obtained in a short time, and what splendid little patients these young children are.

*Read before the American Society of Orthodontists, Chicago, Ill., April 24, 25, 26, 1922.

The upper appliances are: seamless gold crowns on the deciduous second molars; a 19-gauge iridio-platinum round lingual wire, soldered to the crowns and fitting against the lingual surfaces of all of the other maxillary teeth; buccal hooks on the crowns for the intermaxillary elastics. The lingual wire was lengthened in the anterior portion by the use of Lourie pliers to increase somewhat the width of the arch.

The lower appliances consist of: seamless gold crowns on the deciduous second molars; a labial arch consisting of a 19-gauge iridioplatinum round wire soldered to the buccal surfaces of the crowns, in order to eliminate buccal tubes, nuts, a threaded portion of arch-wire, etc. Hooks are soldered to



Fig. 1.



Fig. 2.

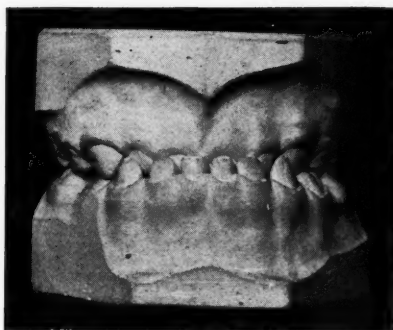


Fig. 3.

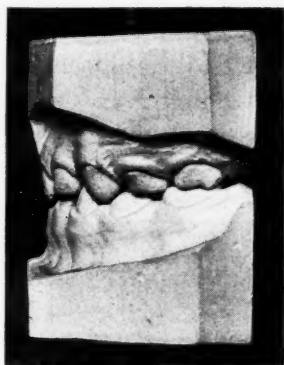


Fig. 4.



Fig. 5.

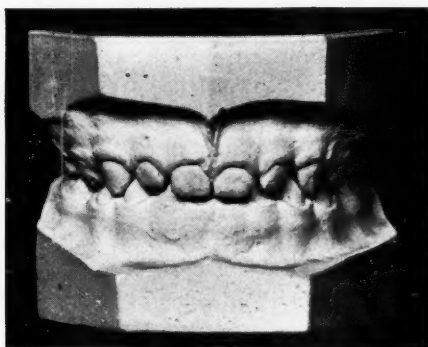


Fig. 6.

the labial wire in the canine region for intermaxillary elastics. Iridioplatinum bands, with a labial spur to rest on the occlusal side of the wire were placed upon the deciduous canines to steady the appliance and prevent the tipping of the second molars under the stress of the intermaxillary pressure.

The pressure applied has been a very gentle pressure by using thin intermaxillary elastics. These have been worn only three weeks, but you will note that the teeth have moved rapidly, and at present the maxillary anterior teeth are practically end-to-end with the mandibular teeth. In cases of this kind, the best results are obtained if the treatment is given between the ages of three and four and one-half years, at a time when the roots of the deciduous teeth are their full length.

Photographs taken two months later (Figs. 4, 5, and 6) show the completed case.

DEPARTMENT OF ORTHODONTIC TECHNIC

Edited By
H. C. Pollock, D.D.S., St. Louis, Mo.

ELEMENTARY ORTHODONTIC TECHNIC

By H. C. Pollock, D.D.S., St. Louis, Mo.

(Continued from March issue.)

THE *International Journal of Orthodontia, Oral Surgery and Radiography*, has been confronted for many months with the apparent demand which exists among many of its readers for not only technic of an elementary nature for orthodontic procedure, but in addition to this there exists an equally manifest demand for a digest of the current thought of workers in this field upon the various phases of the subject. It is the endeavor then of the author of these monthly discussions also to portray the current thought as expressed by various authors upon phases of this subject, consequently quotations may appear from time to time from those whose experience and opinions are interesting and worthy of reflection.

Along with other current ideas upon this subject, and appropriate to a discussion of elementary technic, comes the preface to McCoy's book, "Applied Orthodontia," a few excerpts from which follow:

"One of the first and most difficult tasks which the teacher must face is that of establishing in the mind of the student a correct conception of the real aims and problems with which orthodontia is concerned. The old and erroneous idea that the chief object in studying the subject is to learn to manipulate mechanical appliances, seems in too many instances to have a firm hold both upon students and dentists.

"This misconception is doubtless contributed to by the numerous advertisements of orthodontic mechanism appearing in our professional journals, some of which make extravagant and sometimes misleading claims. Through this medium, as well as by other methods of propaganda more subtle and far-reaching, many appliances are sold to the profession, some of which are good, some mediocre and others hopelessly bad.

"Regardless of the virtue or lack of virtue of these commercialized products, the constant publicity given to them proves confusing to the uninitiated, and diverts the attention from those more important phases, the bio-

logic fundamentals so essential to truly successful practice. So at the very outset, the teacher is confronted with a problem of reeducation which in itself is no small task."

To quote from another paragraph in this preface:

"While orthodontia has become well established as a distinct and separate branch of dentistry, it is of vast importance that all dentists, even though they do not practice this specialty, be conversant with its fundamental principles. The importance of this can hardly be overestimated when we realize the increasing interest given the teeth and oral structures by the laity and the consequent multiplied demand for counsel pertaining to this field."

Regardless of the difference of opinion as to who is and who is not qualified to treat malocclusion, the fact remains that the vigorous advertising campaigns as inaugurated by those who are merchandising some types of orthodontic appliances, are indirectly responsible for the use of many of these devices by operators who are unaware of the more or less standard and accepted methods of treatment as adopted and used by orthodontists throughout the country. An operator who is reasonably familiar with the rudiments of modern orthodontic dynamics and who is in a position to judge for himself the merits of orthodontic appliances, recognizes a Goldberg cartoon when he sees it and is not easily misled by spectacular claims made by some advertisements which appear in current dental journals.

A TECHNIC FOR FITTING PLAIN OR MAGILL BANDS TO MOLAR OR ANCHOR TEETH FOR FIXED APPLIANCES

Anchor bands may be fitted by either the direct or indirect method, and the procedures have been described by the authors of various textbooks in the past as well as the current ones.

Direct Method.—The direct method is popular with many operators. The band material is fitted directly to the tooth in the mouth, manipulating it on the tooth with the fingers until the band assumes a position about the tooth. With the aid of either band-forming pliers or straight-nosed pliers, the band material is grasped and pulled tightly to place. The free ends of the material are brought tightly in contact, then the whole is removed. The band is placed end to end, and soldered as shown in Fig. 4.

A pliers in design and shape similar to that shown in Fig. 5 is most to be desired for this process, inasmuch as small delicate beaks turned at right angles must be used in order that the bulk of the heat required in the soldering process will not be allowed to escape through the medium of the shanks of the pliers. Flux is placed within the seam and after the piece has been raised to the required temperature, solder, preferably in wire form, is touched to the seam and the joint is quickly sealed thereby. It is to be remembered that the seam should appear upon the band at a point where no future soldered attachments are to be anticipated. The blowpipe used for this purpose should be an orthodontic blowpipe, manufactured for that particular purpose, one capable of throwing a sharp, hot, pinpoint flame, controlled by either com-

pressed air or by the dependable mouth method. Several pliers are manufactured particularly for pinching bands, namely, those designed by Case, Angle, Pullen, and Johnson (band-forming pliers).

The band may then be replaced upon the tooth, fitted, contoured, bur-nished, and manipulated to a fit, particular attention being given to the plac-ing of the gingival edge just beneath the free margin of the gum, as well as crimping the edge to a "grasping" fit at this point.

Indirect Method.—Impression of the tooth or teeth to be banded is taken, it being contended by some that this method relieves the patient of some of the tedious technic of fitting bands direct to the tooth in the mouth, as described above.

The impressions are poured or packed with "artificial stone," or some of

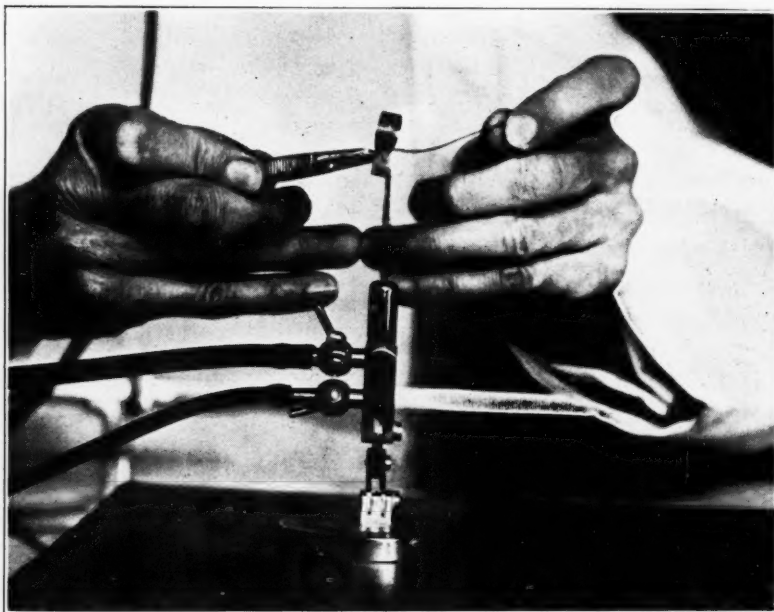


Fig. 4.—Band is heated to a red heat after ends have been placed together and seam is touched quickly with wire solder. Sharp pin point flame should be used and piece heated to high temperature before solder is touched to band.

the low fusing metals. Some operators advocate plaster of paris; however, the latter material is not nearly so sturdy for this purpose as the two former materials. The tooth to be banded is then isolated, or set apart from the approximating teeth on the model and the band may be fitted the same as described above for the direct method on the natural tooth.

The fit of bands, then, fitted by the indirect method, is dependent for its accuracy almost entirely upon the perfection of the impression and the care exercised in isolating the tooth to be banded by means of carving. For further reference upon this method, see Mershon's method as described by Dewey in "Practical Orthodontia," ed. 4, p. 166; McCoy, "Applied Orthodontia," p. 191; Case in *Journal*, January, 1923, ix, No. 1.

Still another method may be employed by some who prefer a very rigid and stiff anchor band. A series of manufactured contoured steel male dies

of teeth are kept on hand, and after the band has been fitted by the usual indirect method, it is contoured over the steel die in the set which corresponds most closely in size and shape to the tooth about to be banded. After the band is contoured by means of forcing and tapping with light blows from a small hammer, it is then burnished and adapted to the tooth directly in the mouth. This latter method permits of the use of a hard, rigid band but does not permit of so perfect an adaptation as can be secured with the less springy and more inelastic materials.

Some manufacturers make a seamless contoured blank band for convenience, the use of which, it is claimed by some, expedites the process of fitting a plain molar band upon the tooth; however, the accuracy of fit which may be secured by the use of this type of band is seemingly a matter of conjecture, in regard to which there exists plainly a wide divergence of opinion. It is obvious that these bands cannot be made to fit accurately to the tooth without cutting, manipulating and reuniting by a soldered seam; but on account of their preliminary convenient contour, they, at times at least, expedite the operation of fitting a plain band, provided a sufficient supply is carried on



Fig. 5.

hand to nearly approximate the size and shape of the tooth which it is desired to band.

Still another rather simple technic of the indirect process is described by McCoy in his textbook, "Applied Orthodontia," recently published, from which the following quotation is taken:

"Preparing the Teeth for Banding.—The teeth to be banded are then isolated from the other teeth on the model by the use of fine saws, two parallel cuts being made both to the mesial and to the distal, and the intervening material removed so that the anchor teeth are intact but a space created on each side. With a sharp-pointed pencil the junction of the gingiva with the tooth is marked so that this relationship may be kept in mind during the making and fitting of the band. Sharp chisels are then used and the portion of the model about the tooth corresponding to the soft tissues and immediate alveolar bone is trimmed away, allowing the full crown portion and part of the root portion to be exposed."

Measuring and Fitting the Band.—According to McCoy the band material may then be adapted to the prepared tooth by drawing it tightly about the hard, unyielding model (if it is artificial stone) with a pair of band-forming pliers in the same manner as is done in the mouth in using the

"direct method," or seamless ferrules, may be utilized after the manner already described. However, equally good, if not better, results will be obtained by accurately measuring the circumference of the tooth by encircling it at its greatest diameter with a fine ligature wire and twisting it up tightly. This measuring wire is then cut on the opposite side from the twist, is straightened out, and used as a measure of length for the section of band material to be used for the band. In cutting the piece of band material, the edges to be soldered are cut at right angles to the length of the material, but an angle of approximately 16 degrees, depending upon the amount of contour of the tooth. The edges are then soldered together, a lap joint being formed.

Contouring pliers are then used to shape the band to approximate form of the tooth crown; it is placed upon the tooth model for trial, fitting is removed and recontoured or modified until it accurately fits the tooth model. In the fitting and contouring process, "Mershon pliers" are of very great

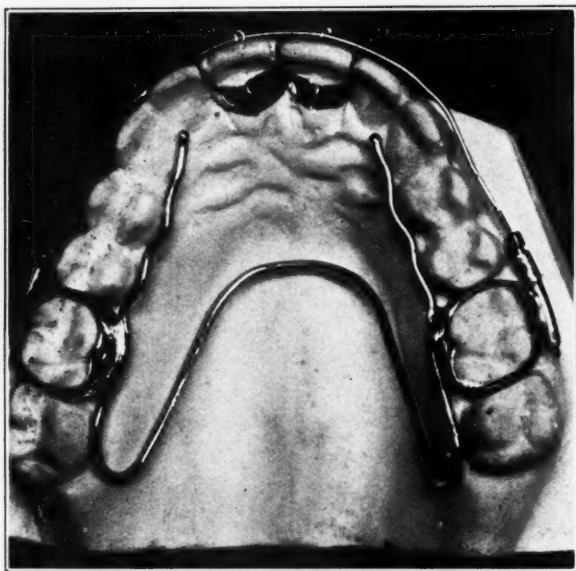


Fig. 6.

assistance, making possible both gross and minute adaptations in the construction of such bands.

Opinion is plainly conflicting among various orthodontists and authors as to the relative merits of the direct versus the indirect method of the fitting of plain molar bands to the anchor teeth. It is obviously conservative to assume, however, that either method may be followed to the successful goal of a well fitted anchor band by the careful and painstaking operator, the direct method probably being the more simple and the more popular at present.

Anchor bands having been fitted upon the teeth, the foundation is thus set up for the construction of the fixed orthodontic appliance, regardless of the type or style of appliance which is about to be designed and constructed for the case. To ascertain, then, the particular type of appliance which is most to be desired for the correction of the case, the operator usually refers back to the original casts for thorough study and arrives at an outline and

design of an appliance to accomplish his purpose in the most simple and satisfactory manner.

Fig. 6 illustrates the importance and gives the relation anchor bands bear to the completed appliance. It shows them to be absolutely fundamental to a fixed orthodontic appliance, and to ignore the importance of materials and technic in this operation is to construct an appliance which is destined to be a failure before it is started.

Before leaving the subject of anchor bands and anchor band technic, it might be well to mention another technic employed by some who have a preference for plain bands upon the anchor teeth.

Clamp bands of the Angle type (screw and nut on the lingual side) are fitted upon the tooth, the nut tightened, band burnished, then removed, and the screw shaft is then soldered directly to the band with silver solder. The band is then taken to the lathe, the entire screw shaft ground away and the product left is a well fitted plain band for the molar tooth.

Still another process on the same principle as the above has been described by J. E. Johnson, *International Journal of Orthodontia*, September, 1920, vi, p. 520, in which the band material is drawn tightly about the tooth by means of a special mechanical device, then removed accordingly and soldered, with a resultant plain band which has been fitted to place by means of mechanical pressure and force, to pull the material tightly and snugly to the tooth.

(To be continued.)

DEPARTMENT OF ORAL SURGERY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

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SURGICAL CONSIDERATIONS OF PULPLESS TEETH*

BY CHALMERS J. LYONS, D.D.Sc., AND U. G. RICKERT, M.S., D.D.S.,
ANN ARBOR, MICH.

IT has been clearly demonstrated that pulpless teeth are an important etiology factor in systemic disturbances as a result of infection arising therefrom. Just what the dental profession has to do with pulpless teeth is a subject that has attracted much attention in the past and has caused it to become widely divided in its opinion.

One part of the profession has determined that all pulpless teeth are a menace to the health of mankind, and therefore should be eradicated. Another section of the profession has not yet become awake to the serious consequences that may arise from some of these conditions, and is even still devitalizing teeth as of yore.

Now there must be a middle ground for the conscientious, painstaking dentist who has the welfare of his patient always in mind,—the welfare of health as well as that of his teeth. It is this position which your essayist wishes to assume in this paper. Taking this position then in discussing the subject of surgical consideration of pulpless teeth, our premises must be based entirely upon the diagnosis of the case.

Instead of taking the stand that many men have taken in condemning pulpless teeth in their entirety, we wish to look at the patient's physical condition as carefully as we do the teeth. In other words let us see the patient and learn all that there is to know about the patient before deciding upon our course of procedure.

Basing our discussion, therefore, upon the above premises, we will divide the subject of surgical consideration of pulpless teeth under four heads as follows:

1. Simple extraction of the tooth.
2. Simple extraction of the tooth with curettage of the tooth socket.

*Read before the Section of Oral Surgery of the First District Dental Society, December 21, 1922. Published by request of the Essayist in the International Journal of Orthodontia, Oral Surgery and Radiography.

3. So-called surgical removal of the tooth or alveolectomy.
4. Resection of the diseased root end of the tooth or apicoectomy.

Under the first head or simple extraction of the tooth little need be said. We believe when there is no x-ray evidence of bone involvement that everything that is desired is accomplished by the simple extraction of the tooth under aseptic technic and normal and complete repair of the tissues involved will be expected to proceed without further treatment.

The second type of treatment of pulpless teeth is that of simple extraction of the tooth with curettage of the tooth socket. What are the indications for such procedure? When radiographic evidence shows destruction of the periodontal membrane with granuloma and that tissue remains behind following the extraction, small sharp curettes should be used for the purpose of removing the same by inserting the curettes to the apex of the tooth socket and teasing out the diseased tissue. Usually no further treatment is necessary following such procedure.

Third, when the radiogram shows evidence of marked destruction of the osseous tissues surrounding a pulpless tooth or root, when the area of disease seems to be greater in diameter than the orifice of the socket, then in the writer's opinion the operator is justified in making a labial or buccal opening into the diseased area for the purpose of being better able to see the extent of the destruction of tissue and eliminating the same. This procedure can be accomplished either before or after the extraction of the tooth, as the existing condition indicates. A mucoperiosteal flap is turned back from over the involved area extending from the margin of the gum to a point sufficiently extensive to expose the pathologic condition. Then the external plate of the alveolar process is removed with chisels and Rongeur forceps which exposes the diseased area. This is curetted out with suitable curettes following the extraction of the tooth, the margins are then smoothed up and the mucoperiosteal flap returned to normal position and sutured.

It has not been long since some operators were of the opinion that this procedure was indicated in every case in the removal of pulpless teeth, yet the developments of the past few years have served to show the fallacy of such a radical procedure as a matter of routine in the surgical treatment of all pulpless teeth. It has been clearly shown that the lesser involvements may be taken care of just as effectually without the sacrifice of so much tissue that does not rebuild.

The fourth type of treatment of pulpless teeth which is germane to this paper is that which eliminates the pathologic condition without sacrificing the tooth. This procedure is not new and has been described under numerous terms, such as, root resection, root amputation, maxillotomy, apicoectomy, etc. As early as 1884 this operation was described by Farrar* in a paper entitled, "Radical and Heroic Treatment of Alveolar Abscess by Amputation of Roots of Teeth." In those days he recognized one of the basic principles upon which the success of this operation rests, viz., the complete filling of the root canal. He accomplished this by using a gold screw. He says, "I generally use a gold

*Dental Cosmos, March, 1884, xxvi, 89-93.

screw polished at the apical end introduced after the root is cut off and then fill around about the screw with plastic materials such as phosphate of zinc or gutta-percha." Other operators from time to time improved upon the technic of Farrar but it has only been within recent years that much effort has been made to place this operation upon a sane basis. A stimulus has been offered to this procedure in the treatment of pulpless teeth by the development of knowledge concerning the relationship of certain dental conditions to systemic disease. An honest doubt existed in the minds of even the most conservative dentists at one time, whether or not any pulpless teeth could be tolerated in the mouth. At that time my co-workers and myself in the University of Michigan felt that dentistry must find some means of preserving the anterior teeth at least. To this end we gave intensive thought to the question of preservation of these teeth. We were and are still convinced that no therapeutic measures will restore the peridental membrane at the apices of the roots of teeth after it has been destroyed by an infectious process. We were and are still convinced that these morbid conditions at the root ends may be contributing factors to systemic disturbances. The question then came up, must all of the teeth showing evidence of apical infection be sacrificed? In the study of this question of apicoectomy we established four fundamental principles.

1. Diagnosis of the case.
2. Sterilization and filling of the root canals.
3. Resection of the root end followed by curettage of the diseased area.
4. Sealing up the end of the root with its exposed tubuli with a substance which would effectually protect the root end and would not retard the process of repair.

In studying the indications and contraindications for apicoectomy we find that our first principle of a correct diagnosis is not a simple matter.

"The first thing to take into consideration is the present state of health, past illness and the possible recuperative or reserve force of the patient."*

The lowering of the vitality through any of the wasting diseases which would lead to a state of constitutional dyscrasia will have a profound influence in preventing repair following the operation.

Age must be considered in determining the indications and contraindications for this operation. In the aged the process of repair is slow and the prognosis for bone repair is not so good as in the young. In patients of advanced years it would be a question whether the cavity resulting from the operation would be filled in with normal tissue if there was an extensive involvement of the apical area, and the operation would be undertaken in such cases with considerable hazard.

The condition of the general circulation is another important factor to take into consideration in making the diagnosis. It is an established surgical fact that without a certain definite blood supply to the field of operation normal repair will not take place. Notwithstanding the fact that the tissues surrounding the teeth have a very rich blood supply, in certain types of individuals and

*Lyons: Indications and Contraindications for Root Resection, Jr. N.D.A., vi, No. 9, Sept., 1919.

under certain pathologic disturbances, the blood supply even to the oral cavity is diminished so that normal repair of the tissues will be uncertain.

All of these conditions must be considered in making up the diagnosis. In other words we must see the individual, not just the tooth. In making a diagnosis which will lead up to an operation such as apicoectomy, the radiogram must only be used as one link in our whole chain of evidence upon which we must base our conclusions. Very often the radiogram will be misleading. The evidence of pathologic involvement will vary considerably with the different angles from which the radiogram is taken. Unless we obtain a complete history of the case the rarefaction appearing in the radiogram may have occurred previous to certain therapeutic treatment, and if let alone the patient's natural recuperative powers will bring about a repair. In some of these cases it will take months for complete regeneration of the tissues before the shadows will take on the same density as the shadow of the bone surrounding it. When we are convinced by radiographic evidence that the peridental membrane is intact with the root end, then it is our opinion that proper therapeutic measures may preserve these pulpless teeth safely for some patients for many years. The general health of the patient here must also be the predominating factor as to our procedure.

The question may now well arise, what are to be considered favorable cases for apicoectomy? We believe this operation should be limited to single-rooted teeth and maxillary first premolars. This limitation has been made for two reasons. First, because of the accessibility of these teeth a clean surgical operation may be performed. Second, we can be more certain of our sterilization and filling of the root canals. In no case should this operation be resorted to where the tissues are diseased beyond the apical third of the root of the tooth. This operation should never be made simply to save a beautiful crown or bridge abutment. If the root end is infected the chances are that the whole root canal and tubuli are likewise involved and all of the infection not only at the root end but that in the canals and tubuli must be eliminated before normal repair may be expected.

THE PREPARATION OF THE CANAL FOR RESECTION

The canals must be made aseptic. In roots supporting crowns the agent of first choice is reduced silver. / The silver solution is made in some transparent glass vessel. We use the concave end of a dappen dish. To two drops of chemically pure 28 per cent ammonia, just enough pulverized silver nitrate is added to give it a faint and slightly cloudy appearance, and just carried to the point of solution where the ammoniacal odor disappears. Great care must be taken not to have an excess precipitate. If this does occur, the addition of a little more ammonia will be required. This solution, if properly prepared, carries a maximum amount of silver. / We prefer silver because of its antiseptic properties and its capacity for filling the dental tubuli. Then, too, it is amazing how tolerant the tissues are to pure silver. And last, but not of least importance, because it reduces the solubility of dentin and the possibility of resorption. We have found it indispensable for capping the root end following amputation. The ease with which it may be applied must be evident to every-

one. Dentin is poorly adapted to withstand even the mild reactions of the body fluids. We have taken sections of roots and reduced silver carefully over one end of the section and allowed the other to remain exposed. These sections were placed into tubes in water of slight acidity for long periods and observations made. The silvered end is very resistant as compared with the unprotected section. We believe that our successful clinical experience has been largely the result of this precaution. This treatment is important because it prevents the apical dentin from becoming infected during the process of repair which would give trouble later.

In anterior teeth where the natural crown is to be retained the possibility of discoloration occasionally with the most painstaking precautions offers a serious objection to reduced silver. Discoloration may follow, even with careful protection of the coronal dentin, with such protective agents as collodian

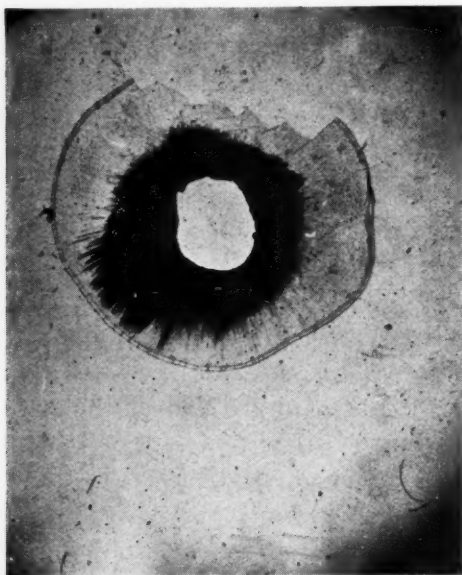


Fig. 1.



Fig. 2.

and shellac. It is more likely to occur where the organic material of the tubuli of the dentin has been destroyed. The silver follows the tubuli to the granular layer of Tomes, then may be carried just under the enamel up through the crown. We have carefully studied these exceptional cases. Where positive assurance must be given not to have the discoloration we have a method of second choice which has been attended with success in a smaller clinical experience. This is the chloroform rosin method to be described more fully later.

THE REDUCED SILVER TECHNIC

This method has the advantage in that the whole process of treatment and filling may be carried out in one sitting. The canals are opened and cleaned with phenolsulphonic acid, sulphuric acid, or sodium potassium. This is very important because it opens the dental tubuli; it makes a better surface for

close adaptation of the root filling material. The canal is then cleansed with alcohol and carefully dried. Care must be exercised to prevent seepage into the field of resection, for under these conditions penetration of the dentin with the silver solution is prevented. When the canal has been sufficiently enlarged and dried it is flooded with silver solution made as described above. This may be introduced in any way convenient to the operator. We prefer a barbed broach with a small amount of cotton. The solution should remain in the canal at least ten minutes. A second broach with cotton is then used to carry a small amount of 10 per cent formalin into the canal. This should remain a few minutes, after which the canal is dried and the silver treatment repeated. The second silver treatment is followed with the reducing solution in two or three minutes. A third moistening of the canal wall with silver solution is advisable but if reduced should preferably be done with eugenol. The canal is now ready for filling. Fig. 1 shows a cross section of canal treated with silver. Fig. 2 shows oblique section with silver showing in tubuli.

THE CHLOROFORM ROSIN PREPARATION OF CANAL

This method has the disadvantage in that it must be preceded by suitable treatment. For this we prefer chloramine treatment until negative cultures are found from dressings of several days' occupancy of the canal. The canal is now enlarged as described above, dried with the same degree of care as suggested for the silver treatment. Chloroform rosin is introduced instead of the silver solution by any convenient method. After remaining in the canal for a few minutes a warm, metallic instrument that will reach to a point beyond the resection plane is introduced. The standard canal drying points used on a dental switch board serve admirably. Care must be taken not to overheat the instrument. The object of this is to evaporate the chloroform and seal the tubuli with the residue rosin. This should be repeated several times and all excess of solvent should then be volatilized. The canal is now ready for filling.

TECHNIC OF FILLING CANALS

Cut small sections of gutta-percha points to length of from one to three millimeters. Then select from the set of twelve Kerr root canal pluggers the one that will pass to a point just beyond the plane of resection. By warming the end of the plugger a section of a point approximately the diameter of the end of the plugger is attached and warmed just enough to make it slightly plastic but not enough to make it sticky. This is carried to the root end and followed by packing under pressure sections with pluggers of suitable sizes. The success of the operation will depend largely on the skill of the operator in closely adapting the fillings. Loose fillings and shrinkage are sure to be followed by diffusion from the resected apical end resulting in certain failure.

In the silver reduction technic, resection is indicated on the same day of the root filling. This is important because some of the formalin may get beyond the apex which will be followed with serious inflammation. A small amount of

formalin will do no harm if it does not go beyond the area to be excised. We advise care in introduction of the formalin so as not to have it pass into the periapical tissue. In the chloroform method more time is permissible but we advise resection as soon as possible after filling.

Assuming now that the root canals and dental tubuli have been sterilized and the root canal properly filled, we are ready to proceed with the operation of resecting the root end. The same surgical asepsis is indicated as would be required for any similar operation in other parts of the body.

It seems to be conceded that local anesthesia, either conduction or infiltration, is the anesthetic of choice for this operation on account of having the cooperation of the patient and of being able to control the hemorrhage which are factors not to be ignored. Clinical experience has demonstrated that an isotonic anesthetic solution, if properly used, does not interfere with the process of repair.

After the field has been anesthetized, the first step is to remove the gross sepsis from the field of operation. This is accomplished by the use of alcohol to dry the surface, followed by swabbing with 7 per cent tincture of iodine.

A curved incision is then made over the point where the tooth is to be resected, about 2 cm. in length, with the convexity toward the cervical line. The incision should be made through the mucoperiosteum to the alveolar plate. The mucoperiosteum is then raised up by blunt periosteal elevators to form a mucoperiosteal flap. By so doing, the outer plate of the alveolar process over the infected area is exposed. In some cases the outer plate will have become disintegrated so that the raising up of the periosteal flap will expose the apical end of the tooth root. In other cases, when the outer plate of the alveolar process is intact, the apical end of the tooth root is exposed by the use of sharp hand chisels, using them to cut away the outer plate until the root end is exposed. The writer prefers the chisels for exposing the root end on account of the ability to preserve the landmarks.

A sufficient area of the outer plate should be removed so that the infected crypt and the apical end of the tooth is exposed. The resection of the apical end of the root is made at the floor of the crypt and the root of the tooth is cut down to healthy tissue.

The writer has found the Henahan surgical drill, No. 4, a very efficient instrument for the purpose of resecting the root. The resected end is now lifted out of the crypt and the pocket thoroughly curetted with spoon-shaped bone curettes. A large round bur is next used to smooth off the sharp edges of the alveolar plate and to cut the end of the root and base of the crypt down to healthy tissue. The cavity and root end is then polished with a gold finishing bur. The writer prefers the gold finishing burs to stones for this purpose on account of the possibility of the deposition of foreign matter from the stones which would interfere with the process of repair.

We should now have a wound that is sufficiently free from infection and the tissues around it healthy. In any other part of the body such a wound would not be considered serious and repair would usually take place by first intention without untoward symptoms. So will it here. The writer, however,

has felt that the vulnerable point in the whole operation of root resection has not been in getting repair by first intention, but in leaving the end of the root of the tooth exposed, making it susceptible to future resorption.

Many schemes have been resorted to in the past to procure a protection for the exposed root end. Amalgam has been used with more or less success. Encapsulation with gutta-percha has been used; filling the apical end of the canal with gold has been tried; filling the whole canal with lead canal points and after resecting burnishing the lead over the end has been practiced. All of these methods seemed to have met with objections. None seems to have accomplished the full requirement of completely sealing over the exposed root end.

For the past four or five years in the clinics at the University of Michigan, we have been reducing silver over the exposed ends and it seems to meet all of the requirements of completely sealing over the end of the root and does not interfere in any way with the process of repair.

A fresh silver solution made as described above is used, but under no conditions is it permissible to use formalin as the reducing agent. If a reducing agent is to be used eugenol is the one of choice. After resection the surgeon controls seepage and hemorrhage as much as possible to permit of drying the exposed dentin; then the end is moistened with the silver solution and burnished with a warm ball hand burnisher. After several applications of the silver solution and burnishings a small amount of eugenol may be used and also followed with burnishing. In laboratory teeth we have piled caps a millimeter in diameter over resected ends. This is only of interest as a demonstration of its possibilities. Such heavy coating however, is not essential to the success of the operation.

After the process of reducing silver over the exposed end of the root is completed, the next question to decide upon is whether it is better to bring the edges of the flaps together and suture, or to pack the wound and let the process of repair take place by granulation. For some time the writer was prejudiced against suturing these wounds, but clinical experience has shown that when the crypt has not been too extensive, repair has taken place more rapidly and with less pain when the wound has been sutured than when left open. Horse hair or "B & B" dermal suture seems to be preferable to other materials for this purpose. Brilliant Green and Crystal Violet 1 per cent in 50 per cent alcoholic solution as an antiseptic over the wound has met with vary gratifying results. In extensive cases when it is deemed best not to close the wound, but to depend upon granulation for repair, iodoform gauze packed lightly into the crypt for 24 to 48 hours and then removed and the wound irrigated every 24 hours thereafter with 5 per cent salt solution until repair is complete, has been the treatment that has been followed out in the writer's clinics.

POSTOPERATIVE OBSERVATIONS

Just what takes place in the repair of the wound following this operation is a question that has been discussed somewhat extensively. It has been stated

by some observers that the cavity is filled in with sclerotic bone, that is, a hard dense nonvascular osseous tissue, a tissue which would from its character be predisposed to reinfection.

Our observations covering a period of four years are not in accord with these theories for at the present time we are unable to find any authentic record either on bone development or bone regeneration where sclerotic bone has a behavior towards infectious processes different from that of normal bone tissue. However, it has not been our observation that the repaired bone after the operation of root resection has differed materially from the normal bone surrounding the operated area. By the radiographic evidence we see the regular trabecula and marrow spaces which would indicate a blood supply at least similar to that of normal bone and does not appear to be sclerotic. In opening into these areas six months, one year, two years, and three years after the operation the formation of new bone seems to be clinically identical with that adjacent to the old wound. From bacteriologic findings of the above we have found that these areas have remained sterile. We believe if the principles which have been previously laid down for the work are carried out then a wound should result in the bone which will be favorable to normal repair. There are three things necessary for repair of bone, all of which occur in these wounds.

1. Blood vessels.*
2. Building material.
 - a. A loose fibrous tissue.
 - b. A homogeneous (cartilage) matrix, a granular or necrotic material.
3. Stimulus, physiologic or pathologic.

There is an exceedingly rich blood supply in the cancellous bone of the jaws, which amply provides for the first requirements in the regeneration of bone following the operation.

Immediately following the operation of apicoectomy the cavity which results becomes filled with blood which at once forms a clot and subsequently becomes the building material or scaffolding through which the new bone forms.

The third requirement that is necessary for bone regeneration is stimulus. This is provided for by the trauma that is produced by the operation itself. It is a well-known fact that any irritation to bone tissue predisposes to a deposition of calcium salts. This is clinically proved in irritating the ends of bones in an old ununited fracture by drilling holes and scarifying the ends of the bones for the purpose of stimulating osteogenesis. In these cases the process of repair is encouraged and usually after such procedure complete consolidation of the parts will occur, showing all that is necessary in such a case is a stimulus.

"The regeneration of bone is a very complex process. Bone is a tissue containing several important constituents, i.e., the mature bone cell encased in a calcium salt deposit over which it rules; a complex Haversian system containing endothelium, fibroblasts, osteal fibroblasts in all stages of development. lymph spaces and all the elements of circulating blood. Its matrix is a highly

*Ely: Bone Formation and Bone Pathology, Cal. State Jour. of Med., Jan., 1920.

specialized ground substance which is capable of saturation with the earthy salts. Its many modes of development only serve to mystify the ultimate structure; probably no tissue in the human body has as many modes of development as bone. The complexity of the structure and development is the one obstacle encountered in the solution of any problem in which bone either alone or in combination with other tissues is involved. In the study of any problem or problems in which bone receives consideration, it is of paramount importance to keep in mind the presence of the osteoblasts which cannot be differentiated morphologically from the ordinary fibroblast, but which can assume the property of either secreting osseomucin or chondromucin, and eventually becoming, during its course of development, a highly differentiated bone cell surrounded in its mature state by calcareous walls. By virtue of its inherent power it is the ruler of calcium deposition within the area of its influence and also retains the power of dispersing it.''*

Loss in bony structure as a result of the operation of alveolectomy demands regeneration of bone for the preservation of the function of the parts involved and the process of regeneration will vary. The final result is a new deposition of bone similar to that adjacent to the area of repair.

In conclusion we believe our results covering a period of over four years justify our belief that this operation is sane, and many teeth can be saved that otherwise would have to be extracted; that every detail herein stated relative to the procedure must be carried out if we are to succeed with the operation.

We believe that the welfare of the patient should be the first consideration in taking care of pulpless teeth and that a careful diagnosis should be made and all of the evidence in before deciding upon our course of surgical procedure. A hasty diagnosis may lead to just an operation instead of service to the patient.

*Smith: Regeneration of Bone, *Am. Jour. of Med. Sc.*, July, 1915.

ORAL FOCAL INFECTION AND ITS RELATION TO THE PHYSICIAN

BY DR. WILLIAM H. HYDE, BROOKLYN, N. Y.

ORAL focal infection! We have heard this phrase time and time again, yet there never will be too much written upon this important subject. Years ago, this subject was not looked upon with much favor, but today it has been heralded from the housetops. The public sense is aroused, and foolish indeed is the professional man who will not delve into and ponder well its teachings.

It is a well-known fact that the mouth forms an appropriate site for bacterial growth; the salivary glands and the mucous lining harbor the infection. What is to prevent these bacteria from getting a foothold upon the individual? Two factors which must be considered to remedy this condition are first, proper examination and attention of the mouth by the dentist and second, cooperation with the physician.

Such diseases of the eye as muscle palsy, cycloplegia, neuralgia, scleritis, keratitis, etc., are attributed to dental and oral infections. Also diseases as septicemia and pyemia may be caused by infections from the teeth.

As Professor Kirk said in concluding an article in a recent issue of the *Dental Brief*, "The range of problems which present themselves for settlement by the dental practitioner is larger and more complex than can be solved merely by mechanical and manipulative methods. Second, that in order to know how to treat disease conditions in the mouth, or if we are to expect ever to successfully prevent their recurrence, we must familiarize ourselves with the deeper problems of physiology and particularly of nutrition and endeavor to understand the chemistry of the subject to an extent which will make clear to our minds what causes influence the composition of the body secretions and excretions and finally enable us to properly regulate the nutritional forces so that we may determine their composition in a manner unfavorable to the invasion of disease producing microorganisms, in brief, we must learn to so change the composition of the body juices as to develop a maximum of vital resistance to disease invasion, on the principle that good health is the best prophylactic against disease.

If the physician in examining a patient made a practice of examining the mouth as carefully as he does the rest of the body, a great deal of suffering would be alleviated. The dentist on the other hand should try to rid the mouth of all diseased conditions such as pyorrhea, carious teeth, retained roots, cysts, impacted teeth, etc. If he can treat the conditions named he should do so, but if he recognizes that the condition is beyond his professional skill, he should make an unconditional surrender of the patient to the proper specialist whom he believes qualified to treat this condition. Furthermore, there should be harmony between the dentist and physician. A hasty diagnosis of a patient's

trouble may prove disastrous. All clinical findings, as well as the patient's history, should be taken into consideration in formulating a correct diagnosis. If necessary x-ray examination should be made of the condition. The most proficient diagnosticians seldom depart from a systematic plan of examination and so the dentist should adopt a certain routine and follow it in every case. For example in the writer's office the following routine is used:

- (1) History of the case
 - a) Inquire into patient's general health, etc., (if contagious disease, if parents, sisters or brothers ever had disease.)
- (2) Physical Examination
 - a) The general appearance of the patient. The physiognomy. The external examination of the patient. Notice condition of the glands of the neck, etc. Internal examination paying particular attention to the teeth, gums and what dental work is present in the mouth. The lips, cheeks, palate, throat, etc., if any fistulae are present.
- (3) X-ray Examination if necessary.
- (4) Diagnosis.

After the diagnosis is made the diseased condition should be treated accordingly, at the same time avoiding the pitfalls of a radical policy. If the diagnosis is made of apical necrosis indicating that Nature wants to eliminate an obnoxious foreign body, extraction is then indicated, but if the patient is suffering from some chronic disease or has a low resisting power and if the removal of the teeth might improve his condition, then radical treatment should be advised.

A common factor in focal infection is pyorrhea alveolaris or Rigg's disease and its forerunner gingivitis. Other diseased conditions are also important in this study of focal infection, namely, the granuloma or pericementoma, infected retained roots, abscessed teeth, impacted teeth, etc.

Pyorrhea alveolaris or Riggs disease is an infection of the marginal part of the peridental membrane with involvement and destruction of the bone, which forms the alveolar socket.

Gingivitis is an inflammation of the gums, which may be due to unclean mouths, irritation of salivary calculus, etc.

Granuloma or blind abscess if examined under the microscope will be found to contain bacteria and giant cells, and where the granuloma is poorly nourished fatty degeneration of the ground structures takes place. This condition is caused by the reaction of the peridental tissues to mild injurious agents as bacteria, etc.

If necrosis occurs in the center of an epitheliated granuloma, we have a cyst.

Dr. K. H. Toma in an article recently describes the mode of distribution of the infection in oral focal disease as follows:

1. Disease Transmitted by Continuity: The surrounding structures of the oral cavity may become infected from infections of and about the teeth. Necrosis of the palatal bones, abscesses in the floor of the mouth and in the pharynx are liable to occur, while infection of the nose and especially the maxillary sinuses is a very common trouble.

2. Infection of the Gastrointestinal Tract: Dental abscesses with sinuses

and pus pockets discharging into the mouth where the pus mingles with the saliva and food during mastication cause infection of the throat and reach the stomach and intestines, giving rise to most serious diseases of the mucosa of the alimentary canal.

3. **Lymphogenous Infections:** Lesions of the oral cavity are quite often associated with secondary infections of the lymphatic vessels and lymph glands of these parts. There are two groups of lymph glands which drain the jaws and teeth and their mucous membrane. The submental glands take care of the region of the lower incisor teeth.

Still more important because of the greater frequency of their involvement are the submaxillary lymph glands. They are three in number and drain the rest of the teeth and their investing tissue.

4. **Hematogenous Infection:** Today we know that infections are never entirely localized. Bacteria, their toxins, and bacterial poison produced during the process of infection and inflammation, or both, are always absorbed into the circulation, not only from the primary focus but also from secondary lesions, lesions without any direct outlet, such as blind abscesses and periodontal cysts, are very liable to be the source of hematogenous absorption.

5. **Oral Infection as an Indirect Factor:** The fact that a coexisting infection in the mouth may be a considerable burden on a body weakened by some other disease has already been discussed.

The granuloma if examined under the microscope will be found to contain bacteria and giant cells, and where the granuloma is poorly nourished fatty degeneration of the ground structures takes place.

Therefore, if the resistance of the patient is not great enough to overcome these germs, then some systemic condition may arise, as the germ would first pass from the apex of the pulpless tooth through the bone and periosteum into the soft tissue, subjecting the skin to a circumscribed red, fluctuating swelling (subcutaneous granuloma of Mayhofer) and finally break through to the surface through a fistulous opening. At the same time some systemic uneasiness may be felt by the patient, as pain, rise in temperature, loss of appetite, etc. The removal of the teeth involved, curettement of the area, etc., will soon relieve the condition and the patient undoubtedly will again experience good health.

That the teeth have played an important part in systemic disease is a well-known fact. As early as 1728, Fauchard, Paris, said, "It must be remembered that when a portion of our body is inclined to pain the same may be traced to the teeth, so long as they remain in their alveoli and are covered by their membrane, and that some diseases of the teeth are sympathetic and occur occasionally; diseases of the mouth sometimes destroy the maxillary bones; in difficult dentition employ bleeding and clyster to keep the bowels open, these reduce fever and stop or prevent convulsions. In febrile diseases note the eyes, temples, nose, tongue, lips and different colors of the teeth, which indicate the extent of the illness. The teeth often cause otalgia, prosopoplegia, and cephaloplegia; a carious molar caused necrosis of the condyle of the jaw and temporal bone." This proves that as early as 1728 the

teeth were looked upon as a causative agent of disease and as an important factor in formulating a correct diagnosis.

Such men as Rupert Blue, Surgeon-General of the United States Army, say, "Dirty, suppurating, snaggle-toothed mouths are responsible for many cases of heart disease, rheumatism and other chronic affections."

Barker, at Johns Hopkins Hospital, has shown that many cases of pernicious anemia have been cured by having infected teeth extracted.

Dr. Henry A. Cotton reports that at the State Hospital in Trenton, N. J., many patients suffering from mental diseases also had chronic infections of the teeth, tonsils, gastrointestinal tract and after extraction of the teeth the patients recovered.

Charles H. Mayo, M.D., Rochester, Minn., states that three-fourths of the Mayo clinic is abdominal surgery, nearly all of which can be traced to mouth infections.

In view of the evidence compiled herein, one is therefore irresistibly drawn to the conclusion that focal infection is a prime factor in determining the nature of a disease and that every physician as well as every dentist should consider the mouth as the habitat and breeding ground of a large group of microorganisms. A great proportion of these bacteria are pathogenic and may be carried to other parts of the body and there set up disease in organs and tissues remote from the oral cavity. With a view to the elimination of avoidable infections through these channels, it behooves the physician and dentist to work up their cases thoroughly and to cooperate with each other in safeguarding the life and health of the patient.

CANCER OF THE TONGUE, LIPS AND CHEEK

A RÉSUMÉ OF RECENT LITERATURE

BY VILRAY P. BLAIR, M.D., F.A.C.S., AND MORRIS J. MOSKOWITZ, M.D.,
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IN the previous review an attempt was made to present some of the general considerations of cancer of the oral cavity as reflected in the general surgical literature which would be of the broadest interest to the dental profession. The following résumé is based largely upon the discussion of the subject given by invitation at the clinical meeting of the American College of Surgeons held in Boston in October, 1922.

CARCINOMA OF THE LIPS AND CHEEKS

"Malignant disease in these two areas," says Brewer, "situated as they are so closely together that one could with difficulty state where one ends and the other begins, nevertheless presents such differences in frequency, in clinical progress, in extension to other structures, in accessibility to radical treatment, and in ultimate results that one could almost affirm that in prognosis they represent the two extremes of hope and despair." Cancer of the lip is of fairly frequent occurrence. From an analysis of 3889 cases in thirty-one surgical clinics, Brewer states that in from 2 to 3 per cent of cancer subjects seeking treatment, the primary disease is located in the lip. The lower lip was found to be involved 12 times as often as the upper. Broders gives the ratio as 26 to 1. There is also a marked difference in regard to sex—about 90 per cent of cases occurring in males. The average age at which the condition makes its appearance is fifty-five to sixty years, but it may occur in younger adults. When it does affect younger people it seems to be very malignant. The relationship of trauma, irritation and tobacco to cancer about the oral cavity has been discussed in the preceding paper.

Cancer of the lower lip is almost always of the squamous cell variety. Ewing describes two clinical types, the papillary and the ulcerative, infiltrating type. The papillary variety occurs as a wart-like elevated lesion, situated in or on the epidermis and for a long time is not associated with deep or subepithelial induration. In the past it has not been supposed to invade the lymphatics early. It does, however, extend slowly in all diameters, finally ulcerates and penetrates the underlying tissue, involves the anatomically related lymph nodes, and in the end closely resembles the second or more malignant variety. The ulcerative infiltrating type begins as a broad thickening of the epidermal layer, with early dense infiltration of the deeper structures and the formation of a crater-like ulceration, surrounded by a definite indurated border. It advances more rapidly than does the papil-

lary type, involves the lymphatic structures earlier, is surrounded by an area of edema and not infrequently becomes infected and undergoes extensive necrosis. In late cases, especially where infection is present, extension of the disease is rapid, the original lesion invading the tissues of the cheek, the chin, the mandible as well as the lymph nodes extensively. In the great majority of cases early lymph node metastases occur on the same side as the primary lesion, but this is not always the case, as many instances have been reported in which the earliest lymph node involvement occurred on the side opposite to the primary growth.

Basal cell epithelioma of the lip is exceedingly rare. It is, however, more frequent in the upper than the lower lip. In 333 cases of lip cancer analyzed by Brewer, basal cell epithelioma occurred but eight times—five of the eight on the upper lip. Bloodgood states that the primary basal cell cancer always appears on the cutaneous side of the vermilion border. When first noticed, it is a small, slightly elevated, oval, insensitive nodule. This increases in size very slowly, and for a long time remains superficial with but little or no subcutaneous induration. Later the surface of the lesion ulcerates, leaving a superficial roughening. The ulcerated area slowly increases in diameter, the underlying tissues become indurated and infiltrated. As in the case of rodent ulcers on other parts of the body, if not treated, extensive loss of tissue, causing great deformities, may result.

The simplest and, by far the safest, rule to give both the physician and dentist concerning the diagnosis of cancer of the lip is that advocated by Sistrunk, Pfahler and others. "Any fissure or crust formation on the lips, any ulcer which has persisted for four weeks or more without healing should be looked upon with gravest suspicion. Early and thorough operation should be done." "If the lesion is small," says Bloodgood, "its radical local removal is not at all mutilating." Such excisions should be given a good wide margin. In the more extensive cases in which there is no doubt clinically as to the carcinoma, the condition so far as the operation on the lymph nodes goes, depends upon the local disease and the general condition of the patient. The best results will be obtained by operating before glandular invasion can be demonstrated clinically, and removing the nodes which drain the lip as a prophylactic measure.

That this is true, was shown by Sistrunk's analysis of 136 cases of carcinoma of the lip at the Mayo Clinic. (1) Of 98 cases in which a primary complete operation was performed when the nodes were not involved, 90 per cent are alive five to eight years after operation. (2) Of 11 cases in which the glands were involved at the time of operation 2, or 18 per cent, are alive five years or more after operation. (3) Of 27 cases in which only the growth was excised, usually on account of the age or the physical condition of the patient, 70.2 per cent are alive five to eight years after operation. Brewer reports that in his cases of cancer of the lip where the submental and submaxillary nodes were extirpated although they were not clinically involved, all, or 100 per cent, are well and free from recurrence more than three years after operation, but only one out of five cases in which the glands were demon-

strably involved is alive without recurrence. He says, "If we unite the recent statistics of those clinics in which the five-year standard has been adopted and in which the highest grade of technical work is being carried on, the following averages will be obtained: Group I in which only the primary lesion was removed, 66 per cent well and without evidence of recurrence five or more years. Group II in which the primary lesion and the anatomically related lymph nodes have been removed but without clinical lymph node involvement, 92 per cent of five-year cures. Group III in which the primary lesion and related lymph nodes have been removed but with positive evidence of involvement of the latter—34 per cent of five year cures."

So far as radium treatment is concerned, Simmons, of the Huntington Cancer Hospital in Boston, a place well equipped with radium, says, "We believe that operation is the treatment of choice in practically all cases of carcinoma of the lip, and do not employ radium. The local growth can be removed surgically under local anesthesia, if necessary, more quickly and with less discomfort to the patient than by radium. We advise removal of the glands from one or both sides of the neck, depending upon the location of the tumor, in every case. We do not advise the radical complete neck dissection as in tongue cancer—but are content to remove in one piece, the glands in the submental and submaxillary spaces; and carry the dissection to the bifurcation of the carotid."

CANCER OF THE CHEEK

"If we exclude the eastern tropical countries, where betel nut chewing is practiced," says Brewer, "Primary carcinoma of the cheek may be classed among the rare manifestations of the disease." Most of the cases that have been reported are combined with either malignant disease of the face or mouth. It is a rapidly growing form of the disease, and the cases are often hopeless as regards cure within two months after the onset. Morestin states that the most frequent site of the primary lesion is at or near the angle of the mouth. From there it quickly extends downward and backward or upward and backward and soon involves the mandible or the upper jaw. New states and most writers agree with him, that "the type of the disease which is primary in the cheek is exceeded in its malignancy only by melanocarcinoma." Simmons has reviewed 651 cases of cancer of the buccal mucosa at the Colis P. Huntington Memorial Hospital of Boston during the past five years. He found the outstanding feature in these cases to be the relation of chronic irritation to the disease. Bad teeth, either poorly cared for or decayed, were almost universal. The majority of the patients smoked while some chewed. Leukoplakia was common but the Wassermann reaction was positive in only 14 per cent of the cases. The average delay on the part of the patient from the onset of symptoms to the first consultation with a physician was 1.9 months, and practically 40 per cent were known to have received poor advice from the first physician or dentist consulted.

Pathologically three types were seen; (1) the common form was the rapidly growing squamous cell cancer which forms metastases early; (2)

a papillary form of squamous cell cancer is seen in this location, too, which is of much slower growth and metastasizes at a much later date; (3) a basal cell cancer or rodent ulcer in this location is rarely seen.

In treatment Simmons advises radical operation in all cases in which there is a possibility of cure. The local growth is removed with the knife and cautery at the first operation and ten days later a unilateral radical neck dissection is done, removing the internal jugular vein, the sternomastoid muscle, and all lymphoid tissue from the clavicle to the base of the tongue. The routine method of treatment at the Huntington Hospital has been (1) in very early or precancerous cases—intrabuccal local excision of the growth with cauterization of the wound. (2) Early cases without fixation—excision of the local growth and cauterization and ten days later radical neck dissection followed by postoperative x-ray treatment. (3) In early cases where the condition of the patient does not warrant the radical operation, in cases of the papillary type and in advanced cases where the chance for permanent cure is remote, but in which the local growth may be entirely removed, excision of the local growth by knife and cautery and x-ray treatment to the glandular areas of the neck. (4) In cases where the local growth cannot be entirely removed or when there are definite metastases to the lymph nodes or in recurrent cases, radium seeds are inserted into the growth in the mouth and the glands in the neck are given x-ray treatment. If in doubt about the diagnosis, it is an excellent rule to remove the lesion first and consider the diagnosis afterward, for at that time the operative risks will be nil and the percentage of cures will approximate 100 per cent. The more difficult it is to make the diagnosis of cancer, the more favorable the prognosis.

The end results of treatment of primary carcinoma of the cheek are very poor. Morestin in 1908 reported 25 operations, nearly all involving the jaw with only 2 well two years after operation. Dollinger reported on 61 cases, 11 of these were limited to the mucous membrane of the cheek, the rest involved other structures also. Out of 26 cases which were followed, there were only 3 three-year cures, all in the limited cases. Brewer's statistics on nineteen cases treated before July, 1919, show 3 three-year cures; 1 four-year cure, 1 five year and 1 six-year cure—or 35 per cent of three-year cures.

DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

Edited By

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GRADING PULPLESS TEETH

BY HOWARD R. RAPER, D.D.S., INDIANAPOLIS, AND ALBUQUERQUE

ALL pulpless teeth are risks to health. The risk may be so slight as to be insignificant, like the risk of eating in a restaurant, or riding in an automobile; or it may be great. Just how much risk a patient should be allowed to run is a question we cannot discuss here further than to say that a patient's health picture may be such that he should not carry the risk of any pulpless tooth. On the other hand the patient's health picture may be such that extraction is either indicated or contraindicated, depending on local conditions.

The object in grading pulpless teeth as hereinafter described is to establish their status as risks to health, and to conveniently indicate this status with a figure.

Teachers, to say nothing of students, are aware that grading is an art, not an exact science. So the grade given a tooth by the method described here is not to be looked upon as an absolutely mathematically exact rating of the tooth. The nature of the problem which confronts us in the pulpless tooth precludes the possibility of mathematical exactitude. Nevertheless a method of grading pulpless teeth will occasionally be found useful, just as grades in studies are useful as a means of measuring a student's knowledge, even though such a method is not absolutely exact.

Every man who has attempted to classify pulpless teeth has done it differently. The most commendable feature of the classification given here in the "Grading Chart" is that it takes four important things into account: (1) Evidence of periapical infection. (2) History of disease. (3) Evidence of intradental infection. (4) History of treatment. Most classifications take into account only evidence of periapical infection. This is the most important single consideration, but *other factors should not be overlooked altogether*, as they are ordinarily.

The Grading Chart with directions for its use follows:

GRADING CHART

I

PERIAPICAL INFECTION

1. Definite evidence of periapical infection. (0)
2. Less definite evidence of periapical infection. (5)
3. Questionable evidence of periapical infection. (45)
4. No evidence of periapical infection. (100)

II

HISTORY OF DISEASE

1. Sepsis. (10)
2. Unknown. (50)
3. Pulpitis. (100)

III

INTRADENTAL INFECTION, I.E., POTENTIAL

PERIAPICAL INFECTION

1. Very poor canal filling (or none). (0)
2. Poor canal filling. (10 to 25)
3. Fair canal filling. (50 to 75)
4. Good canal filling. (80 to 90)
5. Perfect (?) canal filling. (100)

IV

HISTORY OF TREATMENT

1. Unknown. (Give no grade.)
2. Antiseptic surgical treatment. (50)
3. Aseptic surgical treatment. (100)

DIRECTIONS FOR GRADING PULPLESS TEETH

To grade pulpless teeth proceed as follows: Grade one tooth at a time. Select the classification of the tooth under each of the four headings given above, grade accordingly, giving the grade indicated by the figures in parenthesis.

Add the four grades, but count the "Periapical Infection" grade twice, thus making five grades to add.

Divide the sum obtained by adding the five grades by five.

The result is the grade for the particular tooth "examined."

Example: A certain tooth, let us say, falls under the second classification of the first heading (5), the first classification of the second heading (10), the third classification of the third heading (75), and the second classification of the fourth heading (50). Thus the grades are: 5, *counted twice*, 10, 75 and 50. Add these grades and we get 145. Divide 145 by 5 and we get 29. Thus the grade of the tooth is 29.

N.B. After a very little experience in figuring grades, just enough to get the idea of considering the four factors—namely, periapical findings, intradental findings and history of disease and treatment—the operator may estimate a grade, with moderate accuracy, without following the mathematical procedure just outlined.

DETAILS AND COMMENTS

The "Periapical Infection" grade is counted twice because it is the most important grade.

When a tooth falls into the first classification of the first heading—i.e., periapical infection—it may simply be given a grade of zero (0) without further figuring. (It takes from about three months to a year and a half to get bone regeneration following treatment. It is not practical to grade a tooth with this chart while waiting for periapical bone regeneration.)

When a tooth falls into the first classification of the fourth heading, there are only four grades, instead of five, to be added; therefore divide by four.

The highest grade which can be made is 100.

The lowest grade which can be made is 0.

A tooth with a grade of 50 stands midway between the best and the worst pulpless tooth. It is, let us say, 50 per cent safe, 50 per cent dangerous.

A tooth with a grade of 100 represents the minimum risk to health. It is 100 per cent safe, *for a pulpless tooth*.

A tooth with a grade of zero is a very definite risk to health.

In order for a pulpless tooth to make a grade of 100 there must be (a) no evidence of periapical infection, (b) a history of pulpitis, (c) an apparently perfect canal filling, (d) a history of treatment by aseptic surgical methods.

It is not always easy to decide finally in just what classification to place certain teeth. In such an event a compromise grade may be given.

It is interesting to note the result treatment of a tooth may have on the grade. Take for example the tooth which received a grade of 29. Let us imagine now that this tooth with a grade of 29 is treated, say by ionization or other means of disinfection, a "good canal filling" is inserted, and, at the end of a year, the abscess cavity is filled with new bone. Now let us grade the tooth again: It falls in the fourth classification of the first heading (100), the first classification of the second heading (10), the fourth classification of the third heading (85) and the third classification of the fourth heading (100). Thus the grades are: 100, *counted twice*, 10, 85 and 100. Add these grades and we get 395. Divide 395 by five and we get 79. The grade of the tooth is 79. Thus, by treatment, we have raised the grade from 29 to 79.

EPILOGUE

The foregoing article, in typewritten form, was sent to a friend. In due time a letter of opinion came from this friend. He says a great deal in a few words. I can scarcely be mistaken when I say he did not like my article. I quote the following from his letter:

"In the name of all that is Holy, don't publish the enclosed manuscript. It cannot possibly do any good and may do plenty of harm. Diseased conditions cannot be mathematically rated, and believe me the scientific men in the profession will ridicule your proposition. Therefore I say, don't do it."

I see no reason why I should not publish my paper; therefore I publish it. The paper itself may not show it, but the fact is that it is the product of a great deal of work and of long and earnest consideration of the problem. The results of honest effort, even though they be disappointing, should not be denied a hearing. There is always something to learn from earnest effort, if that something is only how to avoid wasting further effort. It would be presumptuous and asinine for me to ask that my method of grading pulpless teeth be accepted, but I do insist on a hearing; I won't be "shushed."

My friend tells me that "diseased conditions cannot be mathematically rated." What he means to say, I take it, is that disease cannot be mathe-

matically rated with the same accuracy and reliability that one figures out a strictly mathematical problem. If he does mean this I agree with him. In fact I try to emphasize this very point in my paper. I say, in the article, that a "grade given a tooth by the method described here is not to be looked upon as an absolutely mathematically exact rating of the tooth."

But, if my friend means to say that disease and the manifestations and tests for disease are not mathematically rated, he is mistaken. For examples: Take blood pressure: Mathematically indicated by "100 plus the age of the patient" for normal.

Take the Wassermann test: Mathematically indicated by "plus-one positive," "plus-two positive" and so on.

Take the hemoglobin index: Mathematically indicated by 100 for normal, a lower grade being given according to the deficiency of hemoglobin. Which deficiency, by the way, is estimated by the excessively unmathematical procedure of matching shades of red.

Take the Arneth blood count: Mathematically indicated by 100 in the form of the formula $65/35$. When this formula shifts to the left it is taken to indicate low resistance, the degree of shifting indicating the degree of lowered resistance. But why go on with this sort of thing? The fact is that, in the practice of medicine, mathematical ratings are being used all the time. And if it is permissible to match shades of red and grade the hemoglobin content of blood (and it is) it is also permissible to grade pulpless teeth. For, *isn't it better to measure a thing rather inaccurately than not measure it at all?*

As to my method of grading teeth doing harm. I can see that it may be misused of course. Even the taking of the pulse and temperature, which is in itself mathematically exact, is abused by the jackass and the charlatan who have not sense or honor enough to take into consideration normal departure from the average normal.

On the other hand I see also that the grading method may do good. The reaction against extraction is growing so strong that I know men who do not even recommend taking out a tooth when there is definite evidence of periapical osteoclasia. One reason for this is because they have nothing specific to go by, if you know what I mean. If they had a grading chart which would give such a tooth a grade of zero, they would come more nearly realizing the necessity of extraction, or at least treatment.

I am not overenthusiastic about my method of grading teeth. I know its faults and limitations. But it serves me often when I want to be as specific as possible with myself. (It does not enable me to be more specific than possible, as my friend seems to think I think.) And it also serves me well as a means of conveying my opinions to others. I find its use particularly gratifying in consultation with physicians. To illustrate the value of this method as a means of communication between physician and radio-dontist or physician and dentist, let me first set forth a consultation in which the participants get along without grading the teeth. Then I will

present a consultation as it would occur if the tooth or teeth under discussion were given grades.

Physician: "How about this tooth here? Is that trouble there?" (Points to the periapical tissue of a pulpless tooth.)

Dentist: "Well, I should say that tooth shows questionable evidence of disturbance."

Physician: "Questionable. Hum-hum."

Dentist: "Yes, it's questionable. But there is a history of a swollen face. That indicates sepsis and the canal is not filled to the end."

Physician: "Hum-hum."

Dentist: "If it had been a case of pulpitis, and the canal were not filled, it would not make so much difference. But a septic case and an unfilled canal indicates intradental infection and intradental infection is potential periapical infection."

Physician: (Confused and grabbing at the word infection.) "If you think there is infection there we had better extract, hadn't we?"

Dentist: "Well, I can't be absolutely sure there is periapical infection; the evidence is questionable. The intradental infection won't do any harm unless it goes through the apical foramen."

Physician: (Getting restless and bored.) "What's that? Is that anything?" (Points again to some periapical tissue.)

Dentist: (Takes reading glass and looks at negative.) "Well, I can't be absolutely sure. * * * * *

If the physician is one who "believes in saving teeth," he will grab at this last remark of the dentist to say something like this: "Well, if there is any doubt, the tooth had better be saved."

If the physician is one who "believes in extracting dead teeth" the sort of chatter set forth above will continue until the physician has a good opening to say, "Well, if there is any doubt, the tooth had better come out."

If the physician is one who follows the path of least resistance, he will say, "Well, whatever you say. It's up to you. I leave it to you. Take it out or leave it, or treat it. Whatever you say. You know. I don't."

The foregoing is a fair sample of the sort of conversation which passes between physicians and dentists when pulpless teeth are not graded.

When pulpless teeth are graded, consultation about them is not so difficult or so utterly unsatisfactory. For example:

Physician: "How about this tooth?" (Points to periapical tissue of a pulpless tooth.)

Dentist: "Let me answer, doctor, by giving the tooth a grade. If that tooth were in as good condition as it is possible for a pulpless tooth to be, I'd give it a grade of 100. That is, I'd say it is 100 per cent safe for a pulpless tooth. But it isn't in that good condition. I'd give this particular tooth a grade of about 25. That is to say, it is about 25 per cent safe and 75 per cent unsafe."

Physician: "Quite a risk them. Should it be extracted or treated?"

Dentist: "Well, I think I could raise the grade from about 25 to about 75 or 80 by treatment. How is the patient's health? Should she retain a tooth that is only about 75 per cent safe?"

Physician: "I rather doubt it. She has anemia. I've gone over her thoroughly and I can't locate a possible cause."

Dentist: "Then I think we had better extract the tooth, don't you?"

And that is a fair sample of a consultation when teeth are graded. It gets somewhere. And, as physician and dentist become better acquainted with the method of estimating the danger of pulpless teeth with a grade, even fewer words are necessary, to come to an understanding.

It will be noticed that the case we are considering is one where it is difficult to designate just the condition of the pulpless teeth in question. Of course if there is a distinct area of periapical bone destruction, the tooth is quite obviously dangerous and it may be so designated.

It will be noticed also that in doubtful cases, after a grade has been given, then decision as to what to do with the tooth depends on the patient's health. This is exactly as it should be. One patient's health may be such that it is wrong for him to carry a tooth with a grade of 80 or 90 while another's may be such that he is justified in retaining a tooth with a grade of only 60 or 70.

Consultations between dentist and patient, as well as between dentist and physician, are more satisfactory when teeth are graded. In short, it may be said, with much truth, that perhaps the greatest value in the "stunt" of grading teeth lies in the way it makes intelligible conversation, about the subject, possible. The same thing might also be said about other tests and estimates of physical condition which are indicated with a figure. But some means of communicating with one another about these things is very necessary and important.

My friend tells me that "the scientific men of the profession will ridicule my proposition." Just what is my proposition? Do I offer a sort of adding-machine method of indicating the exact degree of danger to health represented by a pulpless tooth? I most emphatically *do not*.

I offer an improvement on the utterly unsatisfactory method of considering and discussing pulpless teeth now in common use. It certainly is an improvement to consider (1) periapical findings (2) history of disease (3) intradental findings and (4) history of treatment, instead of pursuing the usual, futile, unscientific course of trying to put all pulpless teeth into two classes, namely those that "show trouble" and therefore "need attention" and those that "do not show any trouble" and therefore do not "need attention." It is only the ignoramus or the pretender who claims to be able to accurately and successfully classify pulpless teeth in this simple definite way. The man with brains enough to know his limitations and courage enough to admit them, knows and admits that no such classification is possible at this time.

Do I expect or hope that my method of grading teeth will become popular? The question just occurs to me, born as I consider my friend's severe

comments. I have no hopes one way or the other. I offer it to those who may want it; that's all.

As to my expectations: I doubt if the method will become popular. I wonder if dentists are sufficiently interested to pay even the slight attention necessary to get the idea.

But what I think about it will not determine the future of the method. Neither will ridicule or argument from "the scientific men of the profession." If dentists learn of it and it is found useful it will be used. If they do not learn of it, or if it is not found useful, it will not be used.

This thought occurs to me as I try to bring this discussion to a close: I do not wish to leave the impression that I always grade teeth. I do not. I have a place in my office records for grading them. And I grade them when I want to, when I find it advantageous. I may add, too, that *I usually estimate the grades*; I seldom figure them out.

I am of course aware of the fact that different men grading the same tooth will give different grades. I only mention this to keep somebody from directing my attention to it. I am also aware that different men, examining the same blood, give different grades for the hemoglobin content; that different teachers grading the same examination paper give different grades; that different operators, examining the same blood for syphilis give different reports; and so on.

I said I had no hope one way or the other for this method of grading teeth. I have developed a hope since then. What I hope is that the future will see so few pulpless teeth that even I will forget my method of grading them. A vain hope, but a sincere one.

THE TECHNIC OF ORAL RADIOGRAPHY

BY DR. CLARENCE O. SIMPSON, ST. LOUIS, MO.

(Continued from page 239.)

INTRAORAL EXAMINATIONS (CONTINUED)

Pulp Testing.—Contrary to the usual procedure, pulp testing can be done more intelligently and expeditiously after the x-ray examination than before. The teeth which are shown by radiographing to be pulpless do not require testing, and special attention should be given to those which are questionable. Most patients resent the testing, and any curtailment of the

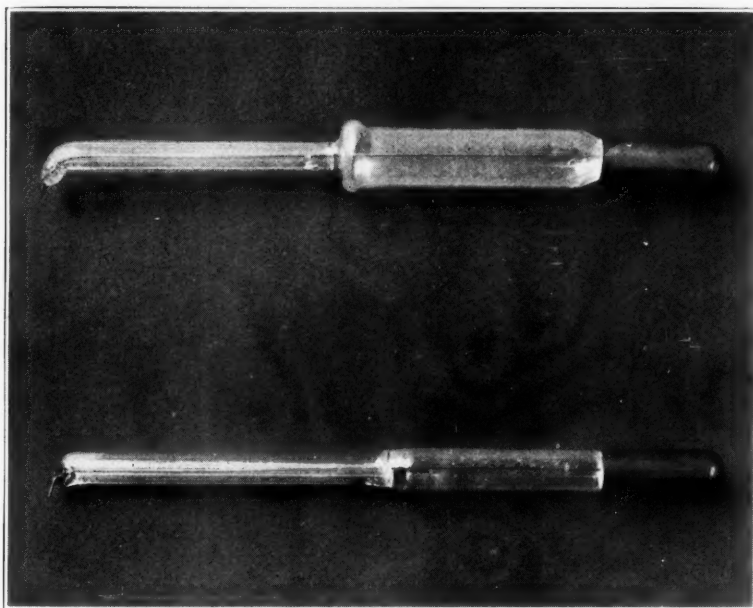


Fig. 1.—High-frequency electrodes suitable for pulp testing. A wire has been inserted to offer less resistance than the vacuum.

ordeal possible without neglecting the examination, is desirable. Conditions occasionally demand a partial service in limiting the radiographic examination to the pulpless teeth, and the vitality test will aid in excluding regions in which periapical disease is unlikely to be present. However, alveolar lesions are found adjacent to vital teeth, while in multirrooted teeth which respond to the vitality test some portions of the pulp may be septic, and disease from canal origin is only one of the many disclosures to be anticipated from a radiodontic examination.

An electric test is more effective than thermal, and high-frequency current offers many advantages over the faradic which has generally been recommended for the purpose. In the use of high-frequency current, moisture

does not affect the result; only one electrode is used; contact with the tongue or other mucous surfaces does not cause discomfort; and application to metal restorations is not noticeably transmitted to the gingiva, or more painful than other locations on vital teeth. Response to the test is reduced in proportion to pulp recession, the insulation of cement under shell crowns precludes the testing of those teeth unless the cervical portion is exposed, and a remarkable limitation of the high-frequency test is the lack of response from many third molars.

The dispatch with which the test can be applied with high-frequency current is attractive, since requesting the patient to hold the neutral electrode for faradic current usually produces a demonstration of electrophobia which requires explanation and persuasion to control. The electric tests for vitality depend upon the sensation from electric stimulus, and the rapid oscillations of the high-frequency coils which have been estimated at 500,000 per second cause more sensation for the voltage employed than the comparatively slow interruptions of the faradic which also tend to produce muscular contraction.

Pulp Testing Apparatus.—Any high-frequency generator may be used for pulp testing, although a delicate control and a small handpiece are desirable. A small "violet ray" appliance designed for home use will serve the purpose, if supported or attached in a convenient location.

Even the smallest vacuum electrodes supplied with the apparatus are unsuitable for pulp testing because of their excessive resistance to the current, but they may easily be transformed into efficient applicators by the following process. Break the glass tip, insert an 18 gauge copper wire to the base of the electrode, and fuse the broken glass tip around the projecting wire. Then cut the wire so $\frac{3}{16}$ of an inch is exposed, curve it to an angle of 60 degrees and polish the point.

This modified electrode conducts the current directly from the glass wall of the base to the tip, and insulates all excepting the exposed end of the wire. The glass wall at the base offers just enough resistance for testing with a small amount of current instead of almost the maximum capacity of the transformer required with a vacuum electrode. Although high-frequency generators are sold for pulp testing, the salesmen resent suggestions of an improved electrode as a reflection on the apparatus, so it will be necessary to remodel the applicator until such appliances are made for service instead of just for sale.

Technic of High-Frequency Tests.—Keen perception and judgment must be exercised in the successful application of all vitality tests. The amount of current required to obtain a response varies with different teeth and individuals, but it bears a rather uniform relation to the size of the teeth. Deciduous teeth and abraded teeth are sensitive to a slight current, while those with large restorations and pulp recession give a doubtful response when the rheostat is fully open.

The tests should begin with a degree of current which cannot be detected, then be gradually increased until sensation is produced in the incisors

and cuspids, then in the premolars, and finally the molars. In each region some of the teeth may require more current than others, and these should be retested after the current has been increased for the next region, to save repeated and unnecessary adjustment of the rheostat. The incisal edges and cusps are susceptible points, but developmental pits or the cervical region are more favorable under some conditions. The application of a small piece of rubber dam or strips of rubber between the teeth is indicated when the current used is sufficiently strong to jump to adjacent teeth. For thorough instruction in pulp testing technic, the reader is referred to Raper's "Electro-Radiographic Diagnosis."

Case Records.—Elaborate history charts are not essential for efficient radiodontic service, but the notation of clinical findings which supplement or modify the radiographic evidence, is valuable in subsequent consideration of the case and accumulating statistics.

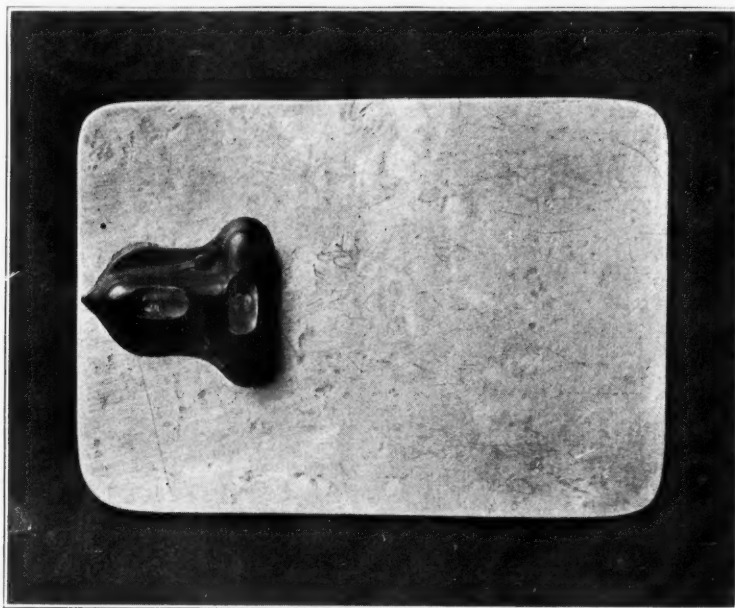


Fig. 2.—An occlusal plane level, made by attaching a two-plane camera level to a piece of aluminum.

The clinical inspection, vitality tests, and history often have an important bearing on the diagnosis, and this data should be concisely recorded rather than entrusted to memory. The listing of anomalies and unusual pathologic manifestations, enables one to find suitable examples for study and illustration when desired.

Duplicate negatives should be preserved and carefully filed under the patient's name for ready inspection, should the occasion arise. Radiographic records are not only valuable for diagnosis, treatment, and scientific investigation, but may prove agencies of justice to operators accused of error or malpractice. The radiographic negatives are the records of the examination and the property of the examiner, who should retain them for the inspection of any one connected with the case. In referred cases, one set of negatives should be delivered to the dentist or physician who requested the examina-

tion, but the patient has no more justification in demanding possession of these records than of pathologic specimens.

Position of the Patient.—The erect posture in the chair is advocated be-



Fig. 3.—Illustrating the use of occlusal plane level in posing for maxillary regions.

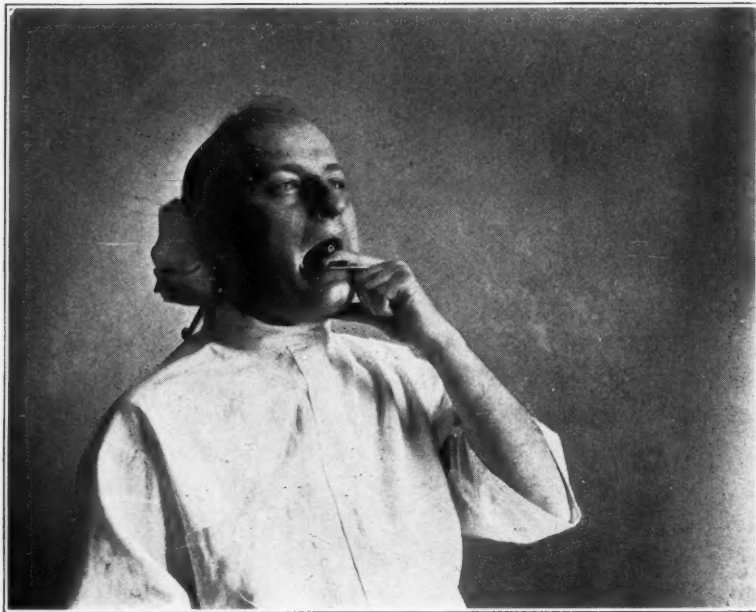


Fig. 4.—Illustrating the use of occlusal plane level in posing for mandibular premolars and molars.

cause it is more adaptable to the pose, more accessible to natural light, and less embarrassing to women than a recumbent position. This requires the back of the chair to be vertical, and any compromise by inclining the back or chair, complicates the poses.

Since immobility is imperative to the success of the examination, the patient should be comfortably seated, and adequately supported by proper adjustment of the chair. Comfort and relaxation greatly contribute to muscle control and ability to obey instructions, without which the most earnest and skillful efforts of the operator will be wasted.

Position of Head.—The pose of the head is a fundamental factor of the systematic technic herein described. A system of angulation must have a base for calculation, and the occlusal plane of the teeth is advocated by the writer as the most accurate and rational basis for angulation in intraoral examinations.

For examination of the maxillary regions, the head is posed so that the occlusal plane of the maxillary teeth anteriorly from the first molars, is horizontal. For the mandibular premolar and molar regions, the head is posed so that the occlusal plane of the mandibular teeth is horizontal when the mouth is open for placement of the film packets. For the mandibular incisor and canine regions, to avoid proximity to the tube, the head is further reclined with the occlusal plane laterally horizontal, until the longitudinal axes of the teeth in the region to be radiographed are vertical, anteroposteriorly.

The poses may be demonstrated and verified with a two-plane spirit level attached to a flat metal plate which is rested on the cusps of the teeth. In practical operations after a little training, the positions can be obtained without mechanical aid, and the mean occlusal plane approximately leveled with due compensation for inequalities in cusp elevation.

Application of the System.—The favorite text book rule for projecting a true image of the teeth, is to direct the rays perpendicular to a line bisecting the planes of the film and teeth. This rule has a mathematical ring which inspires confidence, the diagrams illustrating the method are convincingly simple, and doubtless the principle is correct, but what of the practical application? The plane of the film packet can be seen only with difficulty and not from a favorable position, for calculating the angle of projection. The plane of the teeth cannot be seen, but only surmised from the position of the crowns. The bisecting line is an imaginary plane to which the incidence of the rays must be calculated. Therefore with this method the cone is to be directed so that the imaginary central rays are parallel to an imaginary line, which is perpendicular to an imaginary plane bisecting the angle formed by the problematical plane of the teeth, and the obscure plane of the film. The deceptive rule and illustrations showing the results of incorrectly directing the rays to produce marked elongation or foreshortening of the image, have been the customary instruction in the technic of projection, leaving the application to individual ingenuity which has not proved adequate.

A system of projection based on the position of the teeth in relation to the occlusal plane requires consideration only of the inclination of the teeth and the approximate root length, and provides a precise method for correction in case of miscalculation. Average angles determined by statistical records, with modifications for exceptional conditions, will be stated for each region to serve as a dependable guide in learning the system.

The occlusal plane as a base offers advantages in that it is visible to the operator when calculating the angle of projection, and placing the film packet; it is independent of facial asymmetry, either profile or bilateral; it is applicable to anteroposterior and lateral posing; and it is the plane which establishes the inclination and the relative position of the teeth. The position of the teeth or their inclination in relation to the occlusal plane is the most influential factor in calculating the angle of projection to produce the desired image. It has been generally and erroneously believed that the height of the vault decisively determines the direction of the rays in radiographing the maxillary teeth, but an extremely narrow arch and exostosis at the median raphe of the hard palate are the only variations in form which demand compensating angles.

The walls of the vault are formed by the alveolar process which is developed for the support of the teeth, and conforms to the size and position of the teeth. When the tooth roots are short, the alveolar process is correspondingly developed and the vault is low. With a high vault which is generally supposed to be favorable for intraoral radiography, the roots are proportionally long, and the direction of the rays to produce an accurate image will not greatly differ from that in other examinations. When the vault is wide and apparently low because of a marked buccal and labial inclination of teeth, the rays must be directed at greater vertico-horizontal angles, but the position of the teeth instead of the height of the vault determines the angles. In contrast, the narrow "V" shaped arches usually form extremely high vaults, yet the rays must be directed from a high point because of excessive bending of the film packets in the narrow arch.

Exostosis at the suture of the palatal processes prevents adaptation of the film packets to normal curve of the palate and demands compensation in calculating the angle of projection. This hyperplastic abnormality occurs in about 12 per cent of adults, according to the investigation of Dr. Arthur B. Crane, who devised and perfected the operation for its correction.

(To be continued.)

RADIODONTIC RIDDLES

Conducted by Clarence O. Simpson, M.D., D.D.S.

A Department Devoted to Discussion of the Scientific, Technical, and Ethical Problems
of Radiodontia

Sick 'im

An accepted test of executive capacity is the establishment of an enterprise which is self-sustaining, and will operate without constant personal attention. The following contributions are offered as proof of this department's having reached the state of development, wherein the judicious application of vesicants has supplied sufficient material for the assignment without diligence by the editor.

The jazz style of expression is evidently contagious as exemplified by the scintillating communication in the last issue, and the appended pyrotechnics by the two literary iconoclasts of dentistry. If there are others who disagree with the principles advocated in the Riddles, syncopate and submit it to lift the profession from a cheerless atmosphere, and the Journal from oppressive gravity.

Dear Readers:

The little boy comes in crying, and my! what a sight he is! One black eye, his nose bleeding, his clothes dirty and torn. His mother, a disciple of Sherlock Holmes, gave him the once over, went through her mental deductions rapidly, and said "Now you have been fighting again! Didn't I tell you never to play with any but *good* little boys?" "Yes, Mother, you did, but I thought he *was* a *good* little boy until I hit him."

Thus it is that I address this to my "Dear Readers" (as the circulars read) because I can now say what I please, because that Editor of ours, whom I do not like any more, has shown that he is not a "good little boy."

However unfortunate his disposition may be, as an Editor, he must conform to certain rules of propriety, and as this is addressed to his readers, he cannot read it, and so I am safe. The only weak spot in that argument is that he may get some kind reader to read it to him—and then what?

As you all know, I went out looking for trouble, and I got a PLENTY. I am satisfied, though I can hardly say that I feel better.

Now I want to confess to my *kind readers* that I find that when I wrote to our Editor it was necessary, at times, to take skiagraphs during the process of root canal fillings, I really did think it was so, because I follow that practice myself, but after reading his comeback and Brother Raper's

article in the same Journal, I have come to the conclusion that I do not know anything about root canal filling, and, therefore, I was wrong, and like the real good sport that I always endeavor to be, I want to make public admission of my error.

The reason I became convinced overnight that the methods I have been pursuing for nearly twenty years, and apparently successfully, are wrong, is that one of the most eminent (he is that—that is no joke) radiodontists in this country says that if I would concentrate all of the energy which I put into six pictures into the first one, I might then get such a good picture that the other five would not be necessary.

Another famous radiodontist (in the same number of the Journal) goes way out of his path in order to explain at length how *we experts* should go about filling root canals.

Some obstreperous cuss might say "right off the bat," "Whatinel does the radiodontist know about root canal filling?" In that case, he has only to read Brother Raper's paper, "*Aseptic Root Canal Technic as Taught by a Man Who Does Not Do Root Canal Work*"—that may not be the exact wording of his title, but, at any rate, that is what it should have been—and he will learn that the radiodontist knows a darn sight more about the subject than most of us who have been doing this work for forty years or more.

Brother Raper explains how it is the part of a radiodontist to play the "good Samaritan" act and shield the dentist from the fruits of his rotten work. That is a new one on me; I had never thought of that before. It must be a source of the greatest satisfaction to a patient, who visits the radiodontist in order to have a root canal filling verified (?), when the resultant skiagraph shows the very worst kind of a root canal filling, to have the aforesaid "good Samaritan" produce for his inspection an album of examples of still worse than the worst, each and every one duly autographed by some one of the most prominent dentists of the town. This must immediately restore any confidence in his own dentist, that appeared to be on the wane.

If this fact, never before published as far as I know, were more generally known, possibly many of us would send our root canal work to a radiodontist. What do you think? On the other hand, there really is another side to this picture. Some few men, who have been sending their cases to the radiodontist, unconscious (I assume) of the fact that they were helping to "backed up perhaps by exhibiting some similar cases," may rather dislike this attitude of the radiodontist and decide it better policy to install machines of their own, and keep the exhibits of their own bad work for their own exclusive use. I am willing to confess that I belong to that class.

Brother Raper, a radiodontist, without batting an eye, then hands out the fact (?) that gutta percha is the best root canal filling material. Many a plain, ordinary dentist, like myself for example, considers gutta percha about the worst of all materials for such a purpose.

Brother Raper also tells us at length how to practice "Aseptic Pulp Canal Surgery." I, myself, have seen scores of aseptic surgical operations

performed, every one of them by a real surgeon in a real hospital. I, myself, have seen a few aseptic dental operations attempted, and I have never yet seen one that was not a dismal failure. When an aseptic dental operator stops in the middle of an operation to scratch his head, as I have seen done, and things like that happen right along, it merely makes a joke of such work. I prefer to openly admit that I cannot do aseptic dental work of any kind, and, therefore, pin my faith to antiseptic methods which I can follow out.

I have just happened to see, very recently, three teeth, *in function*, the root canals of which were filled by me, one in 1886, one in 1893 and the other in 1894. All were filled by the antiseptic method, and such results appear satisfactory. (I am not looking up the records of teeth, root canals filled one day, teeth extracted the next, because I do not see the necessity of dragging in such unpleasant histories as these would be in such a pleasant story as this. Do you?)

And right here is where I get off. Kind readers (no message for the Editor who runs a steam roller), good-night.

(Signed) C. EDMUND KELLS.

Inspired by the Provocative Kells

BY HOWARD R. RAPER

I practically always read Kells. So I may class myself as one of his "dear readers," and therefore one of those to whom his latest outburst is addressed.

What a blessing Kells is to conversation. I can have nothing at all to say, then read one of Kells' articles and be so full of contradictory talk that I scarcely know where to begin.

What seems to have happened this time is that Simpson bloodied Kells' nose, and in retaliation Kells seeks to bloody mine. Perhaps Kells deems it safer to attack me than Simpson. If this is the case his judgment may not be so bad; Simpson is some verbal taxidermist.

What brought me into this affair is that Simpson used an article of mine as a weapon against Kells. From the reaction, I judge the weapon did damage. The weapon was a paper entitled, "Aseptic Pulp Canal Surgery and Radiography," published in the February issue of the *International Journal of Orthodontia, Oral Surgery and Radiography*.

Kells says, "Some obstreperous cuss might say, * * * 'Whatinel does a radiodontist know about root canal filling?'" I take it that the "obstreperous cuss" referred to is no other than the irreverent Doctor himself. And I ask him, "does he think that a man is unfit to write about a subject because he is not, just at the time, engaged in the actual physical work he describes?"

This sort of reasoning is of a piece with a belief that a man must be drunk in order to write a paper on the physiological effect of alcohol. It is, in short, unsound reasoning. Among the things it does not take into consideration are, power of and opportunity for observation, previous experience, and perspective.

I grant the desirability of personal experience, but, following my metaphor of the drunk man, I claim that a reformed drunkard may have some reliable opinions about the effect of alcohol, as well as the one who still knows where to get the stuff. In other words, I wish to say that I have had a good deal of experience both in practicing and teaching pulp canal surgery. I spent more years and more effort at that sort of thing than I have spent at radiodontia. In fact it was the pursuit of the study of the treatment of teeth that led me into the field of radiodontia.

Kells says he has been treating teeth antiseptically, *not aseptically*, for "forty years or more." If I am correctly informed, they have been using sticks to plow with in China longer than that, which is said, I would have you know, in the utmost good humor; I smile as I say it.

Kells says I go "way out of my path in order to explain at great length how we experts should go about filling root canals." I do not think I go out of my path. I think a radiodontist should be a diagnostician, and a diagnostician should be a man of broad general view (he should be whether he is or not) and he should be granted the privilege of discussing any phase of dentistry *as he sees it*. And, if a diagnostician is to be all he should be, he should have back of him abundant experience in, not only pulp canal work, but restoration work, plate work, extraction; in all branches of dentistry in fact. Of course I do not intimate that he must be an expert in all branches of dentistry, but the more he knows about all the branches of dentistry in a broad, general, sympathetic and comprehensive way, the better diagnostician he is.

I say a good deal about this because at bottom it is more than simply a personal matter. It is a consideration of the status of the dental diagnostician. Is the technic of making radiograms the only thing that dental diagnosticians are fit to write about? Should they have no opinions about the treatment of teeth, or about the extraction of teeth, or about the influence of the teeth on health? If so, they are not diagnosticians at all; they are merely radiodontic technicians. Of course that is exactly what most of them are, and dentists seem to resent having them become anything more.

It is natural that dentists should resent the kind of a radiodontist I have in mind. He would wield much power, and the wielding of power is always resented. Nevertheless, if I were a patient I would rather have the opinion of a capable diagnostician as to the necessity of the extraction of a tooth than the opinion of a man who makes his living extracting teeth. Not that I wish to accuse the latter fellow with deliberate dishonesty. But human nature is weak and it should not be subjected to unnecessary strains. On the other hand, if I were a patient, I would prefer the opinion of a good exodontist to the opinion of a nitwit radiodontist.

To get back to the treatment of teeth for the moment: If the reader will stop to think about it, he will realize that the radiodontist is in a position to learn a great deal about treating teeth. Dr. Kells should not resent my effort to improve pulp canal practices, just because I am a radiodontist;

and he does seem to resent it and apparently because I am lucky enough not to be at present engaged in the actual clinical work.

I think it would be to the benefit of the people and the quality of dental service if general practitioners would listen to the opinion of competent radiodontists. For example if I were seeking a man to write a paper on the influence of pulpless teeth on health I could not think of a better man for the job than Simpson, a man who neither "saves" nor extracts pulpless teeth, but sees much of them and the patients who have them.

Though Kells does not say so in so many words, he infers that I know nothing of what I am talking about when I discuss the subject of pulp canal surgery. That's what Kells thinks. Dr. Frank Hamilton who read

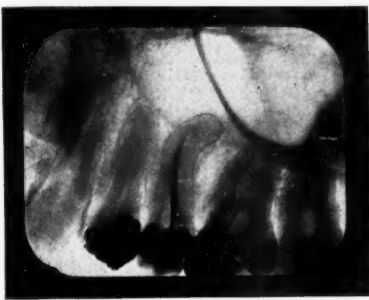


Fig. 1.—Canal curving past the horizontal and downward. The wire in the canal reaches the apex.

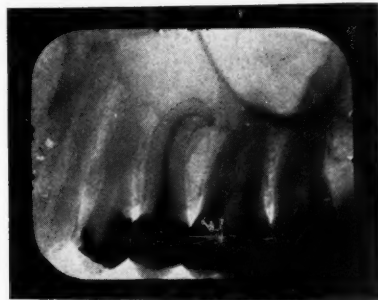


Fig. 2.—Same as Fig. 1 with the canal now filled.



Fig. 3.—Bayonet curved canals with diagnostic wires reaching past the double curve almost to the apex.

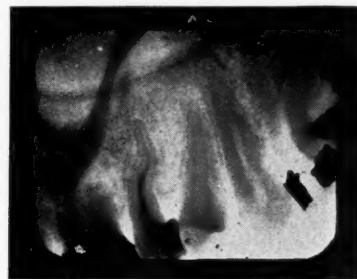


Fig. 4.—Same as Fig. 3 with the canals now filled to the end of the root. These examples of remarkable skill in canal work are by Dr. F. A. Hamilton.

the same paper that Kells ridicules, together with another entitled the "Crisis," says this to me, "What I cannot understand is how the deuce you can feel just the things the fellow does who has his fingers on the broach a lot of the time. How you can ask the questions you do and answer them so perfectly. * * *"

And, Brother Kells, if you think that Hamilton is not something of a canal artist, view Figs. 1, 2, 3 and 4, and don't you dare contradict Hamilton until you can send me radiograms demonstrating canal accomplishments equaling or surpassing those of Hamilton's. * * * I don't really mean that, for if I did I would be guilty of arguing like you argue, and I wouldn't do that. Whether you are able to exhibit canal work showing equal skill to

that of Hamilton's has nothing whatsoever to do with the soundness of your opinions or your right to be heard and to say what you wish to say—so long as you stick to the truth. But you really ought to stick to the truth.

I am thinking now of your sentence which reads as follows: "Brother Raper explains how it is the part of a radiodontist to play the 'good Samaritan' act and shield the dentist from the fruits of his rotten work." Speaking informally, may I not say, why you "obstreperous cuss," I said no such thing, and you know I didn't. What I said was that "the radiodontist often has the opportunity to shield the canal operator against injustice."

Kells says that I, "a radiodontist, without batting an eye, then hand out the fact (?) that gutta percha is the best root canal filling material." I quote Callahan, so I do not feel the necessity of "batting an eye."

Kells speaks of "an aseptic dental operator" who "stopped in the middle of an operation to scratch his head." Surely there is little to say in extenuation of the exponent of asepsis who "stopped in the middle of an operation to scratch his head." If he was bald headed and if his head had been scrubbed with soap and water, then bathed with 90 per cent alcohol, then painted with iodine, it was permissible; but if he had hair and * * *. Well about the best I can say is that I am glad he did not scratch an even less hygienic part of his anatomy. And that is just the way I feel about pulp canal work; whatever may be slightly cleaner wins my approval over what is not quite so clean. Kells' antiseptic canal work is better than septic canal work. Aseptic work is better than antiseptic work. No patient was ever hurt by cleanliness; many have been hurt with dirt. Asepsis is simply cleanliness carried to its logical conclusion.

The world is full of strange things. It is strange that Kells, of all men, should seek to restrict another man's selection of a subject to write about. Kells, who has written about almost everything. Why, just since I have been reading him, he has written expert articles on practically every branch of dentistry. He writes good stuff, too; I would not shut him off or restrict him. In fact I want to encourage him. And to encourage Kells all one needs to do is to mention the subject. About the only one I can think of that Kells has not previously covered is the Electronic Reactions of Abrams.

I direct attention to the fact that while Kells has been covering the subject of dentistry and allied subjects, I have, for years, been rather faithful to two subjects, and those very closely allied to one another: radiodontia and the pulpless tooth problem. But that statement must not be accepted as a promise from me that I will always stick to these things. I shall grant myself the privilege that I grant Kells and other men. I shall write what I bloody please to write about; no one, who does not wish to, needs to read the stuff, or to believe it if they do read it unless it appeals to them as true.

Kells the provocative, long may he wave.

—HOWARD R. RAPER.

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EDITORIALS

The Dental Radiogram, and the Science of Interpretation*

THIS new publication does not describe the procedure and technic of radiography but is limited to a study of the interpretation of the finished radiogram. In the preface the author wisely says that "A dental radiogram is valuable when the radiographic findings are utilized with both the systemic and local, subjective and objective symptoms in arriving at a diagnosis." He further says, "The dentist treating a case is the one qualified to use the dental radiogram in this manner." This is sound common sense and should be pondered over by those medical practitioners who are so ready to order the wholesale extraction of their patients' teeth. The author recommends

*The Dental Radiogram, and The Science of Interpretation, by Frank Carl Browning, M.D. 142 Illustrations, Ed. 1. E. J. Hendricksen Co., New York, N. Y.

that the beginner learn the correct nomenclature of this branch of science. He should have adopted his own advice and used the nomenclature which is accepted by the science of dentistry. Had he done so, he would not have repeatedly referred to the "six year molar" and the "twelve year molar" as well as other terms which are unknown to the dental profession.

There is one term which the author frequently uses, to which we take particular exception and that is the "alveolar cortical shadow." Why he designates this structure as he does is not clear. He writes of the malar shadow, the shadow of the nasal orifices, the shadow of the coronoid process, etc. All of these anatomical structures are as we might say out of the picture, but the "alveolar cortical shadow" is one of the structures for which we look to determine the health or disease of the peridental tissues. The term lamina dura or peridental lamella is to be preferred since they have been accepted by the dental profession. The arrangement of the different subjects is to be highly commended. He first shows and lays great stress on the normal appearance of the structures in and about the oral cavity, pointing out possible shadows which might be confused with pathologic areas. This section should be carefully studied by those practitioners, both medical and dental, who wish to gain a working knowledge of the interpretation of dental radiograms.

The balance of the book is devoted to showing pathologic oral tissues, giving in sequence the diseases and malformations which are commonly found in the mouth. The illustrations are uniformly good and the explanations satisfactory. The typography is all that a dentist who uses his eyes all day could desire. There are a few errors due, no doubt, to hasty proof reading.

—J. T. H.

A Dental Dictionary*

THE aim of this work is to provide a Dental Dictionary which will meet the requirements of all classes of dental practitioners and students of dentistry. The author has produced a very creditable work, especially in regard to pronunciation as a result of the comprehensive plan which has been followed in dividing the words into natural syllabic divisions and the proper accent to affiliate in pronunciation. Special attention has been given to the derivation of words. However, one defect is noticed that there is no indication as to whether the word is an adjective, noun, or verb.

We do not feel capable of reviewing the book from a general dental standpoint but we cannot help but be impressed by the shortcomings from an orthodontic standpoint. Many of the terms used in orthodontic literature; even those adopted by the American Society of Orthodontists have not been given space in this work.

We find "alignment" but no reference to alignment wire. Under "anchorage" we find three definitions, the third is "In orthodontia teeth

*A Dictionary of Dental Science. By L. P. Anthony, D.D.S., Published by Lea and Febiger, Philadelphia, Pa. Price \$4.50.

used for supports of a regulating appliance." As a matter of fact a great many other anchorages are used in orthodontics which do not depend upon the teeth as a means of obtaining resistance and also anchorage is more than the support for a regulating appliance. The many different types of anchorage known to orthodontists are not mentioned at all.

Angle's classification is described, but nothing is said of the more scientific classification of Dr. Lischer and the later classification as suggested by Dr. Case. Under malocclusion, Angle's classification is given in full regardless of the fact that many imperfections have been mentioned by many of the writers in the last few years.

We find the portion of the book referring to regulating appliances is very incomplete very few of the modern appliances being mentioned and such as are considered are described under the term "arch." The definition of "expansion arch" is very incorrect considered from the standpoint of modern orthodontia. If any of my students were to give such a definition, the answer would be considered wrong.

A definition for the "lingual arch" is given and the lingual appliance is credited to Dr. Mershon. I am sure no such credit is claimed by Dr. Mershon. The orthodontists understand only one style of lingual appliance as being designed by Dr. Mershon. No mention is made of the "soldered lingual arch" that was so ably perfected by Dr. Lourie, or the "high labial arch" which has also become a recognized appliance in the treatment of many types of malocclusion.

We find no reference to Dr. Case's contouring appliance which has performed valuable services in the treatment of many cases. In fact the entire book seems to be very deficient in orthodontic terms.

We find a definition for "orthodontia" and also the term "orthodontic" but do not find the accepted terms "orthodontist" or "orthodontics."

The next edition of the book should be strengthened by the addition of standard orthodontic terms. The book contains a number of valuable illustrations and tables of the Arteries, Nerves and Muscles.

A large amount of information has been assembled which will be found very valuable to the dental student and general practitioner.

ORTHODONTIC NEWS AND NOTES

SOME SIDELIGHTS OF MEETING OF AMERICAN SOCIETY OF ORTHODONTISTS

The recent meetings of both the American Society of Orthodontists and the Alumnae Society of the Dewey School of Orthodontia were held at Edgewater Beach Hotel, Chicago, April 9, 10 and 11, and April 12 and 13, respectively.

The attendance of the American Society of Orthodontists being above 140 members, was the largest attendance ever recorded in the history of the organization, all parts of the United States and Canada being well represented, the Pacific Coast in evidence with a standard representation, as well as the Atlantic seaboard. A special car was made up in New York City, seemingly with Dr. Wm. C. Fisher (Bill Fisher) as pilot. In like manner came an orthodontic special car from Kansas City and territory thereabouts, with Dr. Hugh Tanzey director of ceremonies; the Kansas City group having held the Alumnae meeting of the International School of Orthodontia the week previous, adjourned their meeting and came directly to Chicago in a special car.

Under the guidance of President Bert Abel and his committees, the meeting of the American Society of Orthodontists proved to be a most highly enthusiastic, interesting and educational one. One of the outstanding features of the meeting, it might be said, was the paper by Dr. William Engelbach of Saint Louis on the subject of endocrine disturbances and their relation to malocclusion and the discussion which followed, which all proved to be highly interesting to the entire membership, and obviously was responsible for much informal as well as formal discussion. It was not difficult to sense a crystallizing of thought being directed by the orthodontic fraternity, a thought gaining much momentum toward the subject of endocrines as related to malocclusion. The clinics of the last afternoon, while not being revolutionary in character, indicated the trend of thought from the appliance standpoint to be plainly directed toward the lingual arch fundamentals, with various modifications and attachments thereto. A distinct trend was observed toward more complete records for orthodontists, better and more scientifically manufactured metals and springs, predetermination of the arches and many other points too numerous to mention in this short space.

After much discussion, it was decided that the meeting place of the American Society of Orthodontists in 1924 shall be in Kansas City, Missouri,

during the month of March, it being pointed out that as Kansas City enjoyed the reputation of having more orthodontists to the square inch than any other city in the country they should also enjoy the privilege of entertaining the society.

Dr. Waldron, of Newark, N. J., was installed as President for the ensuing year, Dr. C. C. Howard, of Atlanta, Georgia, being President-Elect.

Not the least of the elements contributing to the success of this 1923 meeting were the unusual courtesies extended to the members, as well as the pleasant surroundings of the Edgewater Beach Hotel, which did everything possible to make the stay of visiting orthodontists pleasant. In addition to this the local committee on arrangements contributed greatly to the comfort of the occasion.

The banquet, or testimonial dinner, held in honor of Dr. Henry A. Baker of Boston, contributed to the general interest and congeniality of the occasion. Unfortunately, however, Dr. Baker was unable to be present, but was presented with a beautiful bronze bust, inscribed in such a manner as to indicate the esteem in which he is held by the American Society of Orthodontists. Speakers who paid tribute to Dr. Baker were Drs. Jos. E. Eby, Oscar Carrabine, B. E. Lischer and A. Rogers.

A sidelight of the meeting which attracted no small amount of attention was the very remarkable and interesting clinic of lingual appliances as displayed by Oren Oliver of Nashville in his room at the Hotel. This clinic, while in no way being connected with the program of the meeting, received much favorable comment and will long be remembered as a most complete exhibition of the lingual arch in orthodontia.

The Alumni Association of the International School of Orthodontia

The Eighth Annual Meeting of the Alumni Association of the International School of Orthodontia was held at the Hotel Baltimore, Kansas City, Mo., April 5, 6, and 7, 1923. The following program was carried out:

Thursday, April 5, 1923

- 8:00 Registration.
- 9:00 Address of Welcome. Dr. Charles Channing Allen, Kansas City, Mo.
Response to Address of Welcome. Dr. T. Wallace Sorrels, Oklahoma City, Okla.
President's Address. J. Milton Jones, Wichita, Kans.
- 10:00 Radiography in Orthodontia. (Illustrated.) Clarence O. Simpson, St. Louis, Mo.
- 11:00 Article by Dr. Oren A. Oliver, D.D.S., Nashville, Tenn.
- 12:15 Lunch, Hotel Baltimore—Pompeian Room.
- 1:30 Golf Tournament—Meadowlake Country Club.
- 6:00 Dinner—Meadowlake Country Club-house.

- 9:00 Lecture. Radiography in Orthodontia. Dr. Clarence O. Simpson, St. Louis, Mo.

Friday, April 6, 1923

- 8:30 Technique for Band Construction. Dr. Oren A. Oliver.
- 10:30 Radiography in Orthodontia. Clarence O. Simpson.
- 12:15 Lunch, Hotel Baltimore—Pompeian Room.
- 1:30 Embryology of the Teeth and Face. Robert D. Irland, M.D., F.A.C.S.
- 2:30 Development of the Cranium—Crayon Lecture. Wm. J. Brady.
- 3:30 Pathology of the Mouth. Wm. L. Shearer.
- 4:00 Auto Trip over the City (Ladies included).
- 6:30 Dinner, Hotel Baltimore—Pompeian Room.

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| <p>8:00 Kansas City Dental Society—Regular Meeting.</p> <p><i>Program by Visiting Orthodontists and Guests</i>
 Advantage of Early Orthodontic Treatment (Illustrated). Dr. Oren A. Oliver.</p> <p style="text-align: center;"><i>Saturday, April 7, 1923</i></p> <p>8:30 Technique for Construction of Lingual Arch Appliances. Dr. Oren A. Oliver.</p> <p>10:30 Cleft Palate and Harelip. Dr. Wm. L. Shearer.</p> | <p>11:30 Business Meeting.
 Election of Officers for Ensuing Year.</p> <p>12:30 Lunch, Hotel Baltimore—Pompeiiian Room.</p> <p>2:00 Clinics. Grill Room Annex, Hotel Baltimore.</p> <p>6:30 Banquet to Graduating Class, Hotel Baltimore.
 Toasts.
 Presentation of Diplomas.
 Closing Ceremonies.
 Announcements.</p> |
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The American Society of Dental Radiographers

The third annual meeting of the American Society of Dental Radiographers will be held at the Hotel Statler, Cleveland, on Friday and Saturday, September 7 and 8. An interesting scientific program has been prepared.

All members of the American Dental Association interested in the science of Dental Radiography are very cordially invited to attend. James H. Prothero, President, Marshall Field Bldg., Chicago, Ill. Martin Dewey, Secretary, 501 Fifth Ave., New York, N. Y.

Meeting of the Pacific Coast Society of Orthodontists

The tenth annual meeting of the Pacific Coast Society of Orthodontists will be held at the Hotel Oakland, Oakland, California, May 14, 15, and 16, 1923. All interested are cordially invited to attend. President, Dr. A. A. Solley, 925 Butler Building, San Francisco, Cal. Secretary, Dr. Carl O. Engstrom, 306 Hagelstein Building, Sacramento, Cal.

Notes of Interest

Dr. S. B. Fontaine announces the removal of his office to the Medical Building, Nineteenth and Franklin Streets, Oakland, California. Oral surgery exclusively.

Dr. T. M. Robertson announces the removal of his office to 824 Walnut Street, Coffeyville, Kansas. Practice limited to orthodontia.

Erratum

On page 218, "Cancer of the Mouth and Jaws," the second author's name should read—Moskowitz.





RALPH WALDRON, D.D.S.,
President American Society of Orthodontics, 1923